DOCUMENT RESUME

ED 264 790 HE 018 972

AUTHOR Makinen, Raimo, Ed.; And Others
TITLE Recent Finnish Research on Higher Education, 1985. Kasvatustieteiden Tutkimuslaitoksen Julkaisuja 364.
INSTITUTION Jyvaskyla Univ. (Finland). Inst. for Educational Research.
SPONS AGENCY Ministry of Education, Helsinki (Finland).
REPORT NO ISBN-951-679-375-4
PUB DATE 24 May 85
NOTE 218p.
PUB TYPE Collected Works - Serials (022) -- Reports - Research/Technical (143)

EDRS PRICE MF01/PC09 Plus Postage.
DESCRIPTORS Academic Persistence; Career Choice; College Faculty; College Students; *Educational Change; Educational Development; Educational Economics; *Educational Research; *Foreign Countries; *Higher Education; Humanities; Job Satisfaction; *Learning Processes; Management Development; Medical Education; Sciences; Social Change; Student Attrition; Student Motivation; *Teaching (Occupation)
IDENTIFIERS *Finland

ABSTRACT

The results of current research in higher education in Finland are described in 11 articles, published with the aim of reinforcing contacts with international researchers. Articles' titles and authors include: "University Development, Social Change, and Regional Policy" (Ari Antikainen); "Research on the Economics of Higher Education in Finland" (Olle Anckar); "Academic Careers Study 1965-83: Account of Life Course" (Yrjo-Paavo Hayrynen); "The Connection between Vocational Orientation and Vocational Commitment, Career Choice Satisfaction and Choice of a Teaching Career in the Humanities and Natural Sciences: A Four-Year Follow-up Study" (Hannu Perho); "Students' Motivational Background and Their Orientation Development During Study Years" (Mauri Panhelainen); "Effects of a Degree Reform on Drop-Out and Duration of Studies at the University of Jyvaskyla" (Raimo Makinen, Antero Malin); "The School of Economics and the Formation of Managerial Capability" (Anssi Hyvarinen); "Study in a Multidisciplinary Training Programme: A Follow-up of Students of Medicine" (Annikki Jarvinen); "The Development of Students' Scientific Conceptions of the World" (Anita Nuutinen); "Evaluation of Cognitive Structures and Profundity of the Learning Process" (Kari Niinisto); "Extension Studies Under Pressure from Work Life, Training, and Myths" (Matti Parjanen). (SW)

****
* Reproductions supplied by EDRS are the best that can be made *
* from the original document. *
****

U.S. DEPARTMENT OF EDUCATION
NATIONAL INSTITUTE OF EDUCATION
EDUCATIONAL RESOURCES INFORMATION
CENTER (ERIC)

☑ This document has been reproduced as received from the person or organization originating it.

☐ Minor changes have been made to improve reproduction quality.

• Points of view or opinions stated in this document do not necessarily represent official NIE position or policy.

"PERMISSION TO REPRODUCE THIS MATERIAL HAS BEEN GRANTED BY

Institute for Educ.

~~Research, University~~ of Jyvaskyla

TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)."

Reports from the Institute for Educational Research
University of Jyväskylä

RECENT FINNISH RESEARCH ON HIGHER EDUCATION

1985

Edited by Raimo Mäkinen
Mauri Panhelainen
Matti Parjanen

Kasvatustieteiden tutkimuslaitoksen julkaisuja 364/1985
ISBN 951-679-375-4
ISSN 0448-0953

Jyväskylässä 1985, Kirjapaino Oma

FOREWORD

The emergence of Finnish research into higher education as a distinct multidisciplinary field of inquiry is closely associated with the expansion of the higher educational system in this country and its increasing importance in society in the period beginning with the latter sixties. The bulk of the research done so far falls in the mid-seventies, a point at which the university system was undergoing vigorous reform and research data were essential. Study in this field has nevertheless at no stage attained the proportions or the status it enjoys for example in Sweden, where it has always been more diversified and more extensive.

One problem for Finnish research in the higher educational area has arisen from the cold negligence of university teachers - investigation does of course constantly call in question many of the characteristic aspects of the academic world, even on occasion the activities of its members. It would sometimes seem easier for the scholar to study alien and remote institutions than the close familiar parts of his own environment.

Another problem for Finnish research in particular is the matter of language; most studies have hirherto been published solely in Finnish. This present review seeks to amend the situation in making available in English some representative results of the work done on higher education in this country. To encourage and facilitate international contact, the addresses of contributors

are appended to the reports in the collection, and the writers will be pleased to receive and answer any comment or inquiry.

Typical of the outward development of the Finnish higher educational structure over the past two decades are a marked expansion in numbers of students, teachers and researchers, resources and scope of research, and the establishment of new institutions in various parts of this sparsely populated country.

Along with the development of the university infrastructure the institution itself has also undergone a series of internal reforms affecting both the administration and planning of the universities and the organization of degree courses and studies. This present decade has been called a period of internal development, attention turning to the productivity of research and training and to factors promotive of it. At the same time research into higher education has become an established field as "one-off" projects give way to more deliberate probing and the volume of research increases.

According to the national research register there were in Finland in 1984 about fifty research projects under way - this not including development projects - concerned with the universities, their status and their activities. Most prominent in these undertakings are the universities in Jyväskylä (including the Institute for Educational Research), Joensuu and Tampere. In the respective disciplines the greater proportion of investigations have been in the educational, psychological, sociological and economic fields. Objects of study have comprised a wide range, for example teaching and learning, the problems of teacher training, students' study and professional careers, and problems of the institution itself and its administration.

This present collection comprises articles based on results of current research in higher education. The object in publishing them is to reinforce contacts with international research and researchers in the field.

With the exception of pp. 25-39 the reports were translated into English by Robert MacGilleon, M. A., and typed by Sinikka Vihne. Publication was made possible by financial support from the Ministry of Education.

Jyväskylä, May 24th, 1985

Editors: Raimo Mäkinen Mauri Panhelainen

Matti Parjanen

CONTENTS

CONTRIBUTORS VII

PART I

Ari Antikainen
University Development, Social Change and Regio Policy 3

Olle Anckar
Research on the Economics of Higher Education in Finland 25

PART II

Yrjö-Paavo Häyrynen
Academic Careers Study 1965-83: Account of Life Course .. 43

Hannu Perho
The Connection between Vocational Orientation and Vocational Commitment, Career Choice Satisfaction and Choice of a Teaching Career in the Humanities and Natural Sciences: A Four-Year Follow-Up Study 75

Mauri Panhelainen
Students' Motivational Background and Their Orientation Development During Study Years 93

Raimo Mäkinen & Antero Malin
Effects of a Degree Reform on Drop-Out and Duration of Studies at the University of Jyväskylä 113

Anssi Hyvärinen
The School of Economics and the Formation of Managerial Capability 129

PART III

Annikki Järvinen
Study in a Multidisciplinary Training Programme:
A Follow-up of Students of Medicine 141

Anita Nuutinen
The Development of Students' Scientific Conceptions of
the World 157

Kari Niinistö
Evaluation of Cognitive Structures and Profundity of the
Learning Process 173

PART IV

Matti Parjanen
Extension Studies Under Pressure from Work Life,
Training and Myths 191

CONTRIBUTORS

Olle Anckar, Ph.D., professor in national economics

The Swedish University of Turku
Department of Economics
Domkyrkotorget 3
20500 TURKU

Ari Antikainen, Ph.D., professor in sociology of education

University of Joensuu
Faculty of Education
P.O.Box 111
80101 JOENSUU

Anssi Hyvärinen, M.A., research assistant

Helsinki School of Economics and Business Administration
Department of Basic Research
Runeberginkatu 14-16
00100 HELSINKI

Yrjö-Paavo Häyrynen, Ph.D., professor in psychology

University of Joensuu
Department of Psychology
P.O.Box 111
80101 JOENSUU

Annikki Järvinen, Lic.Educ., lecturer in education

University of Tampere
Institute of Public Health
P.O.Box 607
33101 TAMPERE

Antero Malin, M.A., researcher

University of Jyväskylä
Institute for Educational Research
Seminaarinkatu 15
40100 JYVÄSKYLÄ

Raimo Mäkinen, Ph.D., head of department

University of Jyväskylä
Institute for Educational Research
Seminaarinkatu 15
40100 JYVÄSKYLÄ

Kari Niinistö, Ph.D., docent in education

University of Turku
Department of Education
Lemminkäisenkatu 1
20500 TURKU

Anita Nuutinen, M.A., researcher

University of Jyväskylä
Institute for Educational Research
Seminaarinkatu 15
40100 JYVÄSKYLÄ

Mauri Panhelainen, M.A., researcher

University of Jyväskylä
Institute for Educational Research
Seminaarinkatu 15
40100 JYVÄSKYLÄ

Matti Parjanen, Ph.D., docent of sociology of education

University of Tampere
Department of Academic and International Affairs
P.O.Box 607
33101 TAMPERE

Hannu Perho, Ph.D., lecturer in psychology

University of Joensuu
Department of Psychology
P.O.Box 111
80101 JOENSUU

BEST COPY AVAILABLE

PART I

ARI ANTIKAINEN
UNIVERSITY DEVELOPMENT, SOCIAL CHANGE AND
REGIONAL POLICY

OLLE ANCKAR
RESEARCH ON THE ECONOMICS OF HIGHER EDUCATION
IN FINLAND

Ari Antikainen

UNIVERSITY DEVELOPMENT, SOCIAL CHANGE AND REGIONAL POLICY[1)]

ABSTRACT

The article discusses the development of the Finnish universities during recent decades and the connection between this process and the structure of Finnish society and changes in it. The object is to outline social factors and social change as they have contributed to the formation of the present university system in Finland. The account of past development is incremented with a brief consideration of future prospects.

The early stages of the Finnish higher education are connected with two great processes of change, namely the building of a Finnish nation-state and the industrial revolution in this country. Indeed the current situation may equally be seen in the light of these two transformations and their sequels, and with regard to the society and the educational system which have since evolved this entails a consideration of regional development and regional policy, which are the focal concern in the present account.

Any analysis of the higher education system should in fact reckon with the immense significance of tradition and the relative independence of the academic institutions. Since, however, this present consideration is primarily concerned with the general structure of the system, these aspects will remain in the background.

1) The article is based on results of "University and Environment" (Antikainen 1980 and 1981) and the initial publications of the project "The Finnish University Model and its Future" (Jolkkonen 1984; Turkulainen 1984). It is intended mainly for readers abroad, but may well be of interest to all who are concerned with higher educational and regional policy.

1. The university and society

Approaching historical accounts of the early phases in the life of the Finnish universities, I have as a social scientist invariably been struck by the presence in every case of a clearly demonstrable social context in which the decision to establish a university has been made. As an amateur historian my interpretations have included the following:

- The foundation of the Academy of Turku in 1640 is to be seen as part of an effort on the part of the Swedish kingdom (to which Finland at that time belonged) to ensure in its extensive domains an adequate degree of administrative and religious integration.

- The transfer of this Academy to the new capital Helsinki in 1827 and its re-establishment as the Imperial University of Alexander served the interests of the Russian Czar and the Grand Duke of Finland.

- The establishment of Helsinki University of Techology in 1908 and the Schools of Economics in 1909 and 1911 are connected with the emergence of industry and trade in a changing society.

- The foundation in 1917 of the Åbo Akademi and of Turku University in 1920 must be seen in the light of the bilingual structure of the country's population and the then prevailing language dispute: it was thus bilingualism which first gave impulse to the process of decentralization.

- The establishment of the College of Civics in 1925 was part of the effort to secure national integration after the Civil War and the achievement of Independence; its expansion five years later into the School of Social Sciences came concomitant with the development of public administration and organizational activity in Finland; its removal to Tampere in 1960 came subse-

quent to the establishment in the University of Helsinki of a Faculty of Political Science and the inevitable narrowing of the School's scope for development, while simultaneously regional policy was emerging as a distinct sector; in Tampere the School was extended with a Faculty of Economics and Administration serving the needs of developing capitalism, and was re-established as a university in 1966.

- In 1863, during a period of marked Finnish nationalism, a seminar was established in Jyväskylä for the training of elementary school teachers and was expanded in 1934 into the College of Education as the need for teachers increased and training in the field developed; after a series of further developments this institution became the University of Jyväskylä in 1966. In its quiet inland location Jyväskylä corresponded to the XIXth century conception of an environment suitable for the training of teachers, while subsequent development took place in conjunction with the general expansion of higher education.

- The establishment of the University of Oulu in North Finland in 1958, the solution to the question of a university for East Finland by the establishment of small universities in Joensuu (1969) and Kuopio (1970) and the university of technology college in Lappeenranta (1969), and a the establishment of the school of economics for West Finland in Vaasa (1968), and most recently of the university of for Lapland in Rovaniemi in 1979, are to be seen as consequences of the emergence and the establishment of regional policy in conditions of great structural change and economic growth (Antikainen 1979).

The history of the foundation of other institutions not listed does not alter this general conception: the development of higher education in Finland has taken place in conjunction with two great processes of change, the formation of nation-state and the aftermath of the industrial revolution (cf. Elovainio 1974; Jolkkonen 1984). In the words of Jolkkonen industrializing society was the mother of the Finnish higher educational system,

and national conflicts assumed the role of midwife.

The higher educational system in this country has attained its present proportions during the last few decades. Beginning from the 1950s the student population has doubled with each decade, and over the six decades of the country's independence (1920-79) 75 % of degrees taken were completed in the 1960s and 70s (Jolkkonen, op.cit.). This same period has been one of development in state higher educational planning. Wheres up to the end of the 1960s decisions on higher education took place largely among the professors of Helsinki University, 1967 saw the establishment in the Ministry of Education of a department for higher education and research. The present extent and form of the university system are thus largely the outcome of State planning (Figure 1).

2. The Finnish higher educational network

Among conspicuous structural features of Finland's higher educational establishments Jolkkonen (1984) lists the following:

- the formation of the system out of broad-based and specialized types of institution
- the central role of the former and the uniform level of the system, making it possible to take higher degrees in all institutions, while all combine teaching and research activities
- the large number and wide distribution of these institutions, the old university centres still nevertheless forming a framework
- their small size and the special status of the University of Helsinki
- developments in the direction of the multiversity.

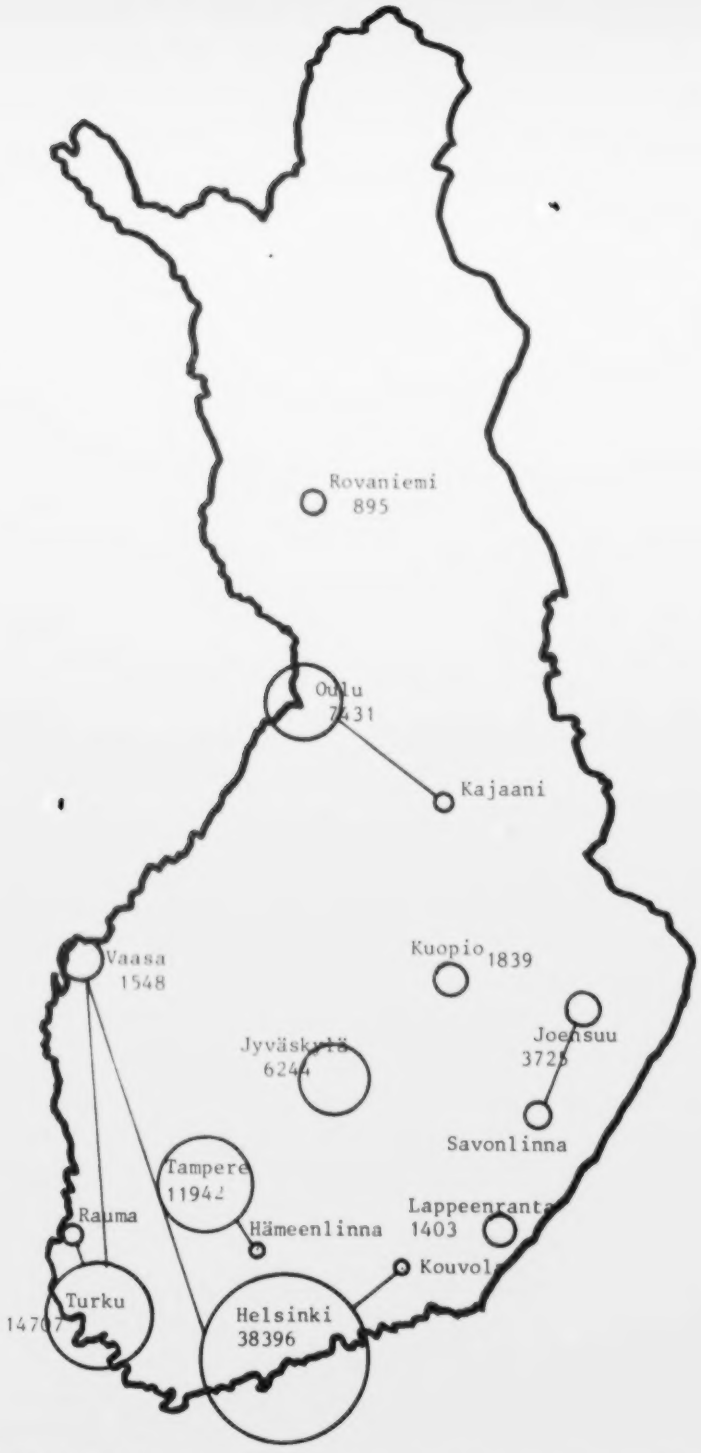


FIGURE 1. Regional distribution of students at institutions of higher education in the autumn of 1984

The objective in this analysis is to map out in detail the regional dimension of the higher educational system, to establish the background, significance and future orientation of the decentralized university network in Finland.

The fact that since the beginning of our century the idea has been put forward of establishing institutions of higher education in various parts of the country is of course no coincidence. Finland is a country extensive in area but sparsely populated, and the maintenance of population in all parts in an industrial age calls for action on the part of the State. Since inland resources, especially the country's forests, have formed the basis of the economy, and since the structure of the economy has long been dominated by agriculture, it has been natural to strive for regionally balanced development. Cultural and ideological factors have likewise contributed to this effort - awareness of the cultural significance of the provinces has since last century been sustained and emphasized by the student associations, the school system and the regional press (see Paasi 1984).

After the Second World War and especially in the 1960s and early 1970s Finland underwent an extremely rapid process of economic and regional restructuring. The proportion of the working population engaged in agriculture and forestry diminished from 46 % in 1950 to 20 % in 1970 and 12 % in 1980. This violent shift manifested itself in an immense migration from rural Finland to the conurbations and particularly from East and North Finland to the industrial centres in the South and to Sweden. Efforts were made to control this structural upheaval and alleviate its consequences by means of regional development policies. Here State measures were directed to two sectors; on the one hand support for industry and other enterprise in the developing regions, on the other consolidation of the infrastructure and service network of these regions. Expansion of training facilities was one of the latter undertakings. Since - as it was then conceived - the structural change involved an ever-increasing

demand for highly trained personnel, and since economic expansion afforded the resources necessary for expansion of training, centres of higher education were established in various parts of the country during a relatively short period of time, with the result that the proportional contribution of the institutions in the Helsinki area to the overall student population fell from the 75 % of 1960 to 55 % in 1970 and 45 % in 1980 (see Table 1).

TABLE 1. Distribution of university students by university[1] towns in 1960, 1965, 1970, 1975, 1980 and 1984

	1960	1965	1970	1975	1980	1984
Helsinki area	75	65	55	47	45	42
Turku	19	18	18	18	17	17
Tampere	2	7	10	13	14	14
Lappeenranta	-	-	0	1	1	2
Jyväskylä	2	6	8	8	7	7
Kuopio	-	-	-	1	2	2
Joensuu	-	-	0	3	3	4
Vaasa	-	-	1	1	2	2
Oulu	2	5	7	9	9	9
Rovaniemi	-	-	-	-	0	1
	100	100	100	100	100	100
	(24100)	(41200)	(57900)	(75400)	(82100)	(86200)

The regional expansion of the higher educational network has thus taken place as a result of State planning and political decisionmaking. What, then, were the political prerequisites for this development? At least two factors have been of prime importance. The first was the breakthrough in the political machinery at work to build a welfare state of a mode of politi-

1) Affiliated establishments combined with main university.

cal thinking advocating equality of opportunity. This pressure towards equality was particularly marked in the field of education, the consensus behind the development effort being partly based on this very objective. The second factor of significance was the prominent position in Finnish politics of the Central Party - originally the Agrarian - as a legacy of Finland's original economic structure. The President of the Republic, Urho Kekkonen, was of this party, and its power rested in its following and the key position of its representatives in the provinces[1]. It was a foregone conclusion that this party would seek to promote realization of plans for expanding the higher educational system in the form of decentralization. This is not to ignore the support of other political groupings, which was ensured by the representational system based on regional and local organization; naturally representatives of all parties would favour the establishment of a university in their own respective areas. The active advocation and eventual clash of interests of regional politicians led among other things to the division of the East Finland University into three institutions. The present form of the network is thus also attributable to regional factors and not solely to centralized planning.

The establishment of new universities was also supported by the situation in educational policy. It was easier to carry out reforms of higher education policy in new universities than in old ones. This question would call for a more profound discussion than is possible here.

The term university network refers precicely to the regional spread of the establishment in this country - the location of centres of higher education in different parts of Finland, their mutual interchange and the fact that each institution has assumed its own (relatively clearcut) area of influence (Anti-

1) It must of course be borne in mind that the Finnish workers' movement has likewise its origin in the rural areas.

kainen 1976, 1980 and 1981). With the exception of the small autonomous province of Ahvenanmaa each part of the country has its own university or affiliated institution. The Helsinki area has five academic centres and all three of the country's institutions of higher education in art Administrational coordination of the higher educational establishment takes place mainly under the auspices of the Ministry of Education - indeed the administration of university and scientific life in Finland falls in respect of its degree of centralization somewhere between the Western and the East European models. There are also various forms of collaboration among the different institutions in both teaching and research (see Hänninen et al. 1978). In past years preconditions for such contact and collaboration have been so favourable that research and teaching personnel in new establishments have been drawn from the old universities. As the newer foundations have expanded and attained independent standing these connections have evidently begun to slacken, for stress today is not only upon the division of labour between the various centres but precisely upon the need for cooperation (see e.g. Linna 1982). It has even been put forward that Finland's higher educational network should be considered one University of Finland.

In their training task the universities have assumed clearly defined functional ties with their environments, whose regional (spatial) orientation may be described in the terms of regional analysis as areas of influence. At the commencement of the training process the formation of these spheres may be considered in the light of student recruitment. All the institutions in question recruit the great majority of their students from their own provinces or their proximity. The proportions of students from these environments varies according to size and field of specialization of the respective establishments between 30 and 60 % - highest in the capital, so that the Helsinki institutions are in this sense the most "regional" - while the proportions from neighbouring provinces in each case fall either side of 10 %. The network thus resembles the old German central

hierarchy model (von Thünen, Christaller, Lösch). The recruitment pattern remained remarkably stable throughout the 1970s (Antikainen 1980; SVT 1982).

In like manner the eventual placement of the those graduating from the universities during the 1970s was to a considerable degree concentrated in the areas served by their place of study (and recruitment), particularly in the university towns or other large centres of population in their provinces. A second target area in this respect is the capital and its environs, which receive migrants from all of the country's universities (see Table 2).

TABLE 2. Work placement of graduates from four universities 1974-80 by provinces

	University of			
Province:	Oulu	Joensuu	Vaasa	Tampere
Uusimaa	13	15	24	26
Turku and Pori	2	4	12	11
Ahvenanmaa	-	-	-	-
Häme	5	6	7	33
Kymi	1	15	5	6
Mikkeli	1	12	3	2
North Karelia	1	24	0	2
Kuopio	3	11	4	3
Central Finland	2	2	4	3
Vaasa	7	5	29	5
Oulu	51	5	7	5
Lapland	12	2	3	2
Foreign countries	-	-	-	0
Unknown	0	0	0	0
Total	100	100	100	100
	(401)	(213)	(136)	(548)

(Turkulainen 1984)

Comparison among the various training and professional groups brings out differences in that those qualifying for the basic service professions - for example teachers, physicians and welfare workers - take up posts, even in the developing regions, much more frequently in the orbit of their training institutions than do those training for industrial and business professions. No great changes took place during the 1970s as regards regional placement; in this respect economic change has proceeded more or less uniformly over the various parts of the country. Perhaps the most notable shift has been in that as vacancies in the public service sector have been filled in the areas surrounding the training establishments, those graduating from these have sought employment more evenly than hitherto over the entire country. All in all the distribution of the trained population (and thus the labour force) has balanced out over the regions, while the proportion of highly trained personnel among the entire population of given areas has increased most in the Helsinki area (Table 3)(Antikainen 1980; Turkulainen 1984).

TABLE 3. Population by provinces in 1980 census, relative change from 1970, and proportion of highly trained and change in it from 1970

	Overall population	change %	Trained[1]	change %	University trained	change %	Prop. of univ. trained in whole polulation	change %
Uusimaa	23	+7	27	-7	45	-8	10	+4
Turku and Pori	15	0	14	-2	12	-1	5	+2
Ahvenanmaa	0	0	1	0	1	0	6	+1
Häme	14	+1	14	-1	11	+4	5	+2
Kymi	7	-4	7	0	5	0	4	+2
Mikkeli	4	-10	4	+5	2	+9	4	+2
North Karelia	4	-7	3	+17	2	+22	4	+2
Kuopio	5	-5	5	+9	3	+25	5	+2
Central Finland	5	-2	5	+4	4	+11	5	+2
Vaasa	9	-2	8	-4	5	+13	4	+2
Oulu	9	0	8	+14	6	+17	5	+2
Lapland	4	-5	4	+15	3	+25	4	+2
Whole country	100	+4	100	+23	100	+78	6	+2.5
	4784710		1490948		166799		(294672)	

(Turkulainen 1984)

1) Lower secondary level education.

Appraisal of the significance of the higher educational institutions in their respective spheres of influence and in regional development in general must resort fot the most part to a theoretical consideration. It is nevertheless manifestly clear that these institutions have functioned as instruments of change in regional economy and regional structure: they have channelled the migration movement from agriculture into industrial and service sectors and at the same time from the rural areas to the urban centres. As part of the social infrastructure they have directed structural change from an inter-regional to an intra-regional process and thus promoted a more even regional development. As to how far they have in other respects furthered the process of modernization,no research data are available. The change in Finnish society during the 1960s and 1970s may be compared to the industrial revolution which took place elsewhere in Europe decades before. Thus the notions of sociology's classics regarding developing capitalism (Marx), the spread of rationality and bureaucracy (Weber) and the collective consciousness advancing from mechanical to organic solidarity (Durkheim) may well apply in a description of the Finnish situation and provide a basis for understanding and explaining it - even if we bear in mind the country's peripheral position and special features (see Koskinen & Lilja 1983).

3. University study and social stratification

At the turn of the century the proportion of children from the lower social strata studying in the Finnish universities was higher than elsewhere in Europe, a circumstance which Elovainio (1974) interprets as being associated with the building process of the nation and the aspiration to its legitimation. In broader terms likewise the structure of the student population has shown a levelling over the decades, but it is difficult to asses how far this tendency has reflected overall structural changes and how far it represents a diminishing of inequality over and above these changes (Antikainen 1983).

When the universities in the present system recruit their students predominantly from their own environment, they acquire a body of students largely representative of the social structure prevailing in each region - this in spite of the overall selectivity of the process (Antikainen 1980). Hence one would expect the regional expansion of the network to have entailed a levelling out of the social structure of the student body. However, such an assumption is not borne out: in reality the 1970s, marked by notable reforms in educational policy, brought no diminution in inequality (Table 4). A structural explanation to this may be forthcoming from at least two quarters. On the one hand the number of those completing matriculation - that is, those eligible for university - has constantly outrun university intakes; these comprised 80 % of six-formers in the 1960s, some 55 % in the 70s, and in the 80s about 40 %. The outcome has been as several age cohorts take part in entrance examinations and, on the other hand, the length of university studies increases, the outcome has been that in reality that in reality 26 % of those matriculating in 1971, 24 % of the 1975 group and only 15 % of those in 1981 entered university in their year of matriculation, while the latest follow-up data show that three years after matriculation only 24 % of that age group gained entrance to higher educational establishments (Central Office of Statistics 1984, 109; Jalkanen & Määttä 1984). At the same time the share of matriculated students in secondary-level vocational education has naturally increased. The "scope" and thus also apparently the degree of selectivity has therefore been on the increase throughout these years. On the other hand the more marked regionality of recruitment may have comprised a counteraction to this; the large share of the predominantly white-collar Helsinki area students may cover the levelling effect of the small institutions in the provinces. Such an interpretation finds support in the data available on the Helsinki School of Economics (Siurala 1984), the University of Tampere and the

University of Joensuu [1]. At he time of the "University and Environment" project it was not possible to predict the counter-effect of the regionalization of recruitment. Both the above-mentioned attempts at explanation call for additional material and analysis before the assumptions they suggest can be accepted or rejected. In addition to structural factors there are obviously considerations of motivation and cognitive predisposition, which are not taken up in the present context (see Olkinuora & Lehtinen 1984). It is worthy of note that the persistence of inequality in training throughout the 1970s was an international experience.

TABLE 4. New students according to father's socio-economic status in 1925, 1930, 1940, 1950, 1960, 1970 and 1980

Status of father	1925	1930	1940	1950	1960	(popul.) [2]	1970	(popul.)	1980 [3]	(popul.)
Employer/ higher offical	42	41	50	39	36	(5)	28	(7)	31	(11)
Junior offical	33	30	26	27	27	(18)	28	(25)	28	(30)
Skilled worker	13	16	11	17	17	(38)	18	(47)	19	(44)
Unskilled worker	1	1	1	1	1		3		3	
Farmer	9	10	11	15	18	(28)	21	(16)	18	(8)
Unknown	2	2	1	1	1	(11)	2	(6)	1	(7)
Total	100	100	100	100	100		100		100	
	1159	1899	1691	2897	5642		10205		80000	

1) Collection of data and statistical treatment of students' social background was discontinued in 1971 - a decision completely incomprehensible considering the vast amounts of utterly useless information which is recorded.
2) Economically active population
3) The data for 1980 refer to the entire student population and not new students. (Regional and social background of university students 1972; Central Office of Stat. 1983; OECD 1982).

Table 4 also reveals the high proportion of farmers' children among the student body - a proportion far beyond their representation in the population at large. Selectivity takes place according to area of farm, i.e. according to their parents' social status as among other student groups. Social mobility direct from agriculture to civic professions is a marked characteristic of the Finnish population (Pöntinen 1983).

Graduates find employment most frequently in white collar sectors - rarely do they for example launch out as entrepreneurs. According to a questionnaire survey involving the universities in Tampere, Oulu and Joensuu and the Vaasa School, about 1 % of those graduating in the 1970s entered the field of private enterprise, slightly more became employers. The great majority - according to the survey 70 % - are engaged in the public sector. Thus the increase in highly trained personnel, almost 80 % during the 70s, is primarily associated with the expansion in the services of the welfare state and its administration. Although the level of unemployment among the university-trained labour force is low - for example 2 % in 1982 as against an overall figure of 7 % - initial unemployment, latent unemployment, inappropriate placement and engagement in fixed-term and temporary posts has become more common as a result of the economic crisis of the mid-70s. Academics have become wage workers alongside other wage workers (Turkulainen 1984).

4. Future without alternatives

As we embark on the 1980s the call for highly trained personnel has ceased to increase. Since the quantitative planning of education takes place in this country according to demand for labour and not so much to social demand for education, the expansion of the higher educational sector has also ceased as

far as basic training is concerned[1]. On the other hand expansion in other forms of activity such as research, further education, service activity and so called new forms continues. These latter include the supplementary training projects instituted at the turn of the 60s/70s, the open university of the same period, and the unemployment training projects, entrepreneur training, development projects and research information services developed at the turn of the last to the present decade. Background to the emergence of these modes of educational activity are - to mention at least a few - examples from abroad, reduced age groups, competition among the universities and change in economic conditions. According to Jolkkonen (1984) separate organizations have generally been established to carry out these new tasks. It remains for the future to decide whether these separate entities will remain intact or whether they will be assimilated as their activities are brought into closer relationship with the work of the scientific establishments.

Technological change, as a prerequisite for competitive viability in an internationally open economy reflects equally upon national and regional economic activity. Production units in any area are in direct competition on the international markets. Training, research and development work have become significant factors in the competitive process. Advanced technological enterprises have come to be located in the city or metropolitan centres in the OECD countries. There is even a special term to describe these centres: the technopolis (e.g. OECD 1983-84). Among the prerequisites for such a centre are a university, a research institute and an airport located in the vicinity. There is discussion in Finland at this moment as to whether the

1) At the secondary level the aim is to give vocational education to everyone, and estimated demand for labour (application of labour method) is used only in quantitative planning of education between different fields.

Helsinki area is the only location in the country possessing appropriate conditions for a technopolis. Regional policy debate ought however to seek to identify the conditions afforded by technological production and use and the various forms of technology in respect of centralization and decentralization.

Since Finland possesses a network of higher educational establishments distributed in the centres of its provinces, it is inevitable that presssures making for their participation in innovations and technological development are considerable. Whereas in earlier periods economic and social objectives in regional and educational policy were in some measure of balance, these respective spheres may well now find themselves in conflict. In respect of higher education likewise it is well to remember that the development of the system to its present proportions and form is based on a particular view of societal policy in which the development of the public sector and welfare services occupied key positions. Rapid changes in another direction may suffice to shatter this foundation.

In debate on higher educational development in various countries their is a measure of dissent as to whether the universities ought to confine themselves to what they know how to do - that is, basic research and advanced teaching - or whether they should redirect their energies to the solution of practical problems. Such considerations may be predicted to gain in prominence in Finland likewise.

Since the present article has approached its object from the point of view of social change - and above all of economic change - and on a general structural level, it should be pointed out in conclusion that in reality the functional prerequisites of the universities as sources of creativity and new knowledge are of decisive importance. The project "The Finnish university model and its future" is indeed concerned to investigate this dimension

REFERENCES

Antikainen, A. 1976. Suomen korkeakouluverkko ja sen kehitysmahdollisuudet. (A study on the higher education network in Finland.) Joensuun korkeakoulun monistesarja A, 22. In Finnish.

Antikainen, A. 1979. Suomen korkeakoululaitoksen alueellisen laajentamisen vaiheet. (On the regional expansion of the Finnish higher education system.) Korkeakoulutieto 7-8, 18-25. In Finnish.

Antikainen, A. 1980. The Regional university. Publications of University of Joensuu A 16.

Antikainen, A. 1981. The regional impact of universities in Finland. Higher Education 10 (4), 437-448.

Antikainen, A. 1983. Remarks on equality of opportunity in the Finnish education system. Joensuun korkeakoulu. Kasvatustieteiden osaston selosteita ja tiedotteita 39.

Elovainio, P. 1974. Korkeakoululaitoksen rakenne ja yhteiskunnan muutos. (The structure of university and societal change.) Sosiologia 11 (5-6), 244-261. In Finnish.

Higher education 1980/1981. 1982. Official Statistics of Finland XXXVII: 10. Central Statistical Office of Finland. Helsinki.

Hänninen, E., Rautkallio, H. & Vuorinen, J. (ed.) 1978. Korkeakoulujen yhteistyö. (Collaboration within universities.) Foundation for Research in Higher Education and Science Policy. Reports 24. English summary.

Jalkanen, H. & Määttä, P. 1984. Keskiasteen jälkeisestä koulutukseen valikoitumisesta. (On the students' career choices in post-secondary education.) Alustus korkeakoulutuksen tutkimuksen II symposiumissa 3.-4.9.1984 Kasvatustieteiden tutkimuslaitoksessa. Jyväskylä: Institute for Educational Research. In Finnish.

Jolkkonen, A. 1985. Korkeakoululaitoksen muotoutuminen ja uudet tehtävät. (The formation and the new functions of the university institute.) University of Joensuu. Bulletins of the Faculty of Education 5. English summary.

Korkeakouluopiskelijain alueellinen ja sosiaalinen tausta 1940-1969. 1972. (Regional and social background of university students 1940-1969.) Helsinki: Opetusministeriö. Korkeakoulu- ja tiedeosaston julkaisusarja 4. English summary.

Koskinen, T. & Lilja,K. 1983. Työ, talous ja suomalainen yhteiskunta. (Work, economy and the Finnish society: three papers on the state of research.) Proceedings of the university of Vaasa, Research Papers 92. English summary.

Linna, M. 1982. Uusi työnjako ja yhteistyö tarpeen korkeakoulujen kesken. (New division of labour and collaboration within universities is needed.) Helsingin Sanomat 11.12.1982. In Finnish.

Olkinuora, E. & Lehtinen, E. 1984. Koulutuksellinen tasa-arvo, kognitiiviset valmiudet ja motivaatio. In K. Sarmavuori (toim.) Opetustiede ja opetuksen tutkimus. (Educational equality, cognitive abilities and motivation.) Turun yliopiston kasvatustieteiden tiedekunta. Julkaisusarja A: 103. In Finnish.

Oppilaiden sosiaalinen tausta v. 1980. 1983. (Pupils' social background in 1980.) Helsinki: The Central Statistical Office of Finland. Statistical Information Bulletin KO 1983:7. In Finnish.

Paasi, A. 1984. Suomen väliportaan aluejärjestelmän kehitys ja hahmottuminen suomalaisten aluetietoisuudessa. (Development of the provincial division of Finland and its shape in the regional consciousness of the Finnish people.) Publications of the Society of Planning Geography 14. Helsinki. English summary.

Pöntinen, S. 1983. Social mobility and social structure. A comparison of Scandinavian countries. Commentationes Scientiarum Socialium 20. The Finnish Society of Sciences and Letters. Helsinki.

Reviews of national policies for education: Finland.1982. Paris: OECD.

Siurala, L. 1983. Educational equality in the 1970's. A study of students at the Helsinki School of Economics. The Helsinki School of Economics Publications series D 66.

Suomalaisten elinolot. 1984. (Living conditions in Finland.) The Central Statistical Office of Finland. Statistical Surveys 74. Helsinki.

Turkulainen, M. 1984. 1970-luvulla korkeakoulututkinnon suorittaneiden ammatillinen ja alueellinen sijoittuminen Suomessa. (The occupational and regional placement of university graduates in Finland in the 1970s.) Joensuun yliopisto. Kasvatustieteiden osaston selosteita 6. English summary.

Olle Anckar

RESEARCH ON THE ECONOMICS OF HIGHER EDUCATION IN FINLAND

ABSTRACT

Just as in most other European countries, the economic situation of higher education in Finland has undergone a deterioration, and education has had to adapt to the stagnation that has taken place. Relations between the labour market and higher education have changed and there exists a pressing need for research and studies in the field of the economics of education. However, such research has been relatively modest in extent in Finland; an overview of research in this field already completed and that which is now in progress is being made. The principal changes that have occurred in the academic labour market in Finland since the early 1970's have been a sharp increase in the number of people with a higher education, the expanding number of women, the decline in the number of degrees awarded during the 1980's and the sharp decrease in real incomes. The trend in Finland is consequently much the same as the European pattern. The paper describes two research projects at present in progress which deal with the relations between higher education and the labour market. These projects aim to study the structure of academic unemployment, the interdependence between higher education and changing conditions on the labour market, income trends for employees with a higher education and the differences in income between the sexes and the changes that have taken place. Preliminary results concerning the changed conditions and development trends during the 1970's are presented.

Great changes followed in the wake of the oil crisis in the 1970's, also in the field of higher education. Society was hit by economic crises, mass unemployment occurred and academic unemployment also became quite common. Stagnation caused financial difficulties for governments and the expansion of higher education came to a standstill. The human capital model, which had hitherto dominated the economics of education, was questioned and alternative theoretical approaches arose (Arrow 1973,

Stiglitz 1975). The filter and sorting models stress the role of education as a source of information for the employer (and also for the individual himself). Education does not raise productivity but it provides the information that certain individuals, those with a higher level of education, are of more use than others. The choice of fundamental attitude to the economic role played by education has sweeping consequences for educational policy. If the cognitive role of education is accorded less weight and its role in transmitting information is seen as more important, then if becomes questionable for a society to increase its investment in higher education. Likewise, it would appear to be less useful to give higher education a more professional and occupational content.

As a result of the changed conditions and the stagnation that has taken place in higher education economists' interest in the economic aspects of education has waned.

However, the important problems that need to be studied in the 80's are the altered relations between higher education and the labour market. It is also necessary to study the way in which higher education reacts to economic constraints and cyclical fluctuations.

In common with the other market economies in western Europe higher education in Finland has also undergone a crisis. The deteroriation in economic conditions that took place in the 70's meant that the higher education in Finland stagnated, that unemployment among academics increased, that real income for those with a university education declined and educational investment became less profitable. The negative effects on the academic world in Finland have, however, been considerably less stringent than in many other contries.

Expansion during the 60's and early 70's and the subsequent stagnation can best be illustrated by the number of students enrolled in institutes of higher education and the number of

degrees awarded.

	New students	Total number of students	Degrees awarded
1960/61	5 770	24 122	3 201
1965/66	10 044	41 205	5 216
1970/71	9 370	57 851	7 954
1975/76	12 915	75 442	10 229
1980/81	11 721	82 060	9 855
1981/82	12 576	83 927	8 907
1982/83	12 152	85 379	9 016
1983/84	12 476	83 672	9 127

The expansion phase is now complete. No new universities are being set up and the number of new students has been stabilised (in accordance with the Ministry of Education's decision) at about 12 500. This figure means that 18-20 per cent of the age group has an opportunity to take a course of higher education. At the moment there are no plans to change this figure in the future. Approximately 50 per cent of the age group have the formal qualifications to purusue higher education. About 35 000 candidates take part in university entry examinations for the 12 500 places available. It is clear, then, that demand far outweighs supply when it come to a question of university places, and there is no likelihood of a balance being achieved in the foreseeable future. The number of degrees passed has stagnated and even declined; this is a result of the longer time required to get a degree, a greater tendency to take part-time work while at university and possibly also a higher drop-out rate. Among the total number of students in higher education women are in a slight majority (1981/82 50.2 %) but women clearly dominate among freshmen (1981/82 54 %). The fact that grammar schools have a clear majority of female students means that the figure for university students is expected to rise further in the near future. Consequently, just over 60 per cent of new students in 1985 are expected to be women.

The number of persons with higher education in gainful employment was 90 200 in 1960, 135 900 in 1970 and 226 600 in 1980. In the last of these years the proportion of women was 47.3 per cent. Of all employed persons the percentage who had received a higher education was 10.2. People with at least an undergraduate level of higher education amounted to 129 700 in 1980, 41.7 per cent of whom were women. The number of people with a higher education at work will increase during the next few years at least. The supply of jobs available for those having an academic education is expected to grow at the same rate. All in all there exists more or less a balance between the number of jobs and the number of academically educated.

Research on higher education has not been particularly extensive in Finland for a number of reasons, and the economic questions involved in higher education have attracted the interests of scholars to only a limited extent. The economics of higher education is, by its very nature, an interdisciplinary problem. Major research projects involve educationists, psychologists, sociologists and economists. Interdisciplinary projects of this type, however, are alien to Finnish conditions. University departments are, quite simply, too small and, furthermore, they are geographically dispersed.

From the point of view of research, however, there is an obvious need for research into the economic problems surrounding higher education. The Academy of Finland, the Ministry of Education and different research organisations have made valiant attempts to encourage research in this field by arranging seminars, charting already completed and ongoing research, and by scholarships and bursaries. These efforts have not been entirely without result, but they have not perhaps succeeded in sufficiently stimulating a research tradition in the field.

Basic research into the economic aspects of higher education in Finland has been extremely limited because of the lack of resources. The only important contribution is Matti Viren's doc-

toral thesis in 1980 (Viren 1979). This study addressed the problems involved in corporate investment in human capital. The author analyses a company's optimum acquisition and stock of human capital under varying market conditions.

More applied research, using theories and methods developed elsewhere and then adapted to Finnish conditions, has been more common. An empirical determination of the profitability of investment in higher education was published by Matti Viren in 1973 (Viren 1974). The results agree quite well with conditions in other European and especially Nordic countries. Questions concerning the financing of university studies were topical in the mid-1970's and some analyses of the impact of different methods were published during the latter part of the 70's (Anckar 1976, Roslin 1973). Some empirical descriptions of academic unemployment during the 70's also exist (Ojamo 1979, Lindström 1981), and there is also a forecast of the supply and demand of academic labour up to the year 1990 (Alt & Ylihuttula 1979). The influence of occupation on the relation between education and income has been studied on the basis of census data (Anckar 1979) and sporadic studies exist which are restricted to a specific region or specific problem. Labour market and employment problems have also been analysed in a number of studies mainly of a sociological nature. Empirical studies have, however, been hindered by the lack of data.

However, the altered relations between higher education and the labour market would also seem to be a most pressing topic of study in Finland. It would be of considerable theoretical and fundamental interest to distinguish between those effects of education that lead to higher productivity and those that spread information. The structure of the academic labour market is also a question which has not so far been attacked.

The following describes in some detail a couple of projects at present in progress which analyse the relationship between hig-

her education and Finnish labour market[1]. The description covers the plan of the projects, some preliminary results and guidelines for further research.

The project "Employment for the Academically Educated, Economic Conditions and the Demand for Higher Education" aims to analyse the role played by changing economic conditions and cyclical fluctuations on the supply of and demand for academic labour. The study attempts to clarify the mechanisms that determine corporate demand for labour and individuals' interest in higher education. Questions that the study will attempt to include: To what extent are people who have received a higher education prepared to take a less well-qualified job with the result that unemployment is gradually forced further down the education scale? How do labour market conditions affect students' desire to study, the length of time their studies take and the drop-out rate? What is the true degree and structure of academic unemployment?

It should be pointed out that (registered) academic unemployment in Finland is not a major problem from the point of view of size. The step increase in the number of new graduates has largely been offset by the rise in the number of vacancies for people with higher education. Steps taken by the government, such as courses for the academically unemployed and the creation of temporary posts in government and local government officies, have reduced the unemployment figures.

While it is true that the degree of academic unemployment increased alarmingly in the latter half of the 70's, this type of unemployment has never been widespread. During the 80's there has been an improvement in the situation. The number of un-

1) The research projects are carried out at the department of economics Åbo Akademi, and are partly financed by the Ministry of Education.

employed persons with at least an undergraduate level of higher education amounted to approximately 2000 persons at year-end 1983 and a further 1000 persons were employed in temporary posts in the public sector. Of the unemployed some 500 participated in courses arranged during the year and about 300 vacant jobs had been notified to official unemployment exchanges. An estimated 1500 persons with an academic education were registered as wholly unemployed. This figure represented only 1-1.5 per cent of the total number of unemployed.

If persons with the lowest level of higher education are also taken into account, then the number of unemployed rose to approximately 4100 or 3 per cent of all unemployed persons. Persons with the lowest level of higher education constitute about 10 per cent of the entire workforce so that unemployment for this category was negligible in relative terms. The unemployment rate amounted to some 2 per cent.

Academic unemployment was in practice an unknown phenomenon in Finland up to the middle of the 70's. In 1976 there was a sudden rise, which continued over the two following years. These changes were undoubtedly linked to the unemployment situation overall but also with the increasing number of the workforce with a higher education. It would seem obvious that the better educated take the best jobs but then outvie those with a lower education for less well-qualified jobs. The employment situation for the better educated largely reflects the overall employment situation but at a relatively lower level.

However, it is impossible to obtain a statistically clear picture of the entire situation for academics. Covert unemployment exists insofar as highly educated people take less qualified jobs. This probably explains the fact that the unemployment figures for women with a higher education are lower than for men. Moreover, the incentive to register as unemployed is that the conditions for receiving unemployment benefit are satisfied, which may not be the case for married people.

At the same time the employment situation for those with a higher education has declined, it has been possible to detect a drop during the 80´s in the number of new graduates from institutes of higher education. During the latter part of the 70´s an average of 10 500 persons graduated each year while for the 80´s the figure has been 9 200. The number of new students enrolled during the preceding 5-year period would seem, however, to point to an increase in the number completing their studies. Furthermore, there has been no recorded increase in the drop-out rate (Kolari 1980). Consequently, it would seem that the duration of studies in higher education has been extended. The reasons for this can be found only in part on the educational level. Preliminary results indicate that the causes are mainly to be sought in the spheres of study financing and the labour market.

The value in real terms of state study loans has decreased since the middle of the 70´s and to finance their studies students are forced either to seek help from their parents or to take part-time jobs. Part-time employment has become increasingly common and consequently studies have been delayed. The system for repaying state study loans has also tempted students to prolong their studies and register as full-time students despite the fact that they have to all intents and purposes completed their course of higher education. Especially in times when the employment situation is tense there is little incentive for students to graduate and begin repaying their loan.

An econometric analysis of a 15-year period shows that the number of degrees awarded is significantly and negatively dependent on unemployemnt among those with a higher education during the preceding period. The employemnt situation therefore affects students´ decision how quickly to complete their studies. It is also necessary to chart in more detail the connection between the labour situation on the one hand and the supply of part-time jobs on the other. If plenty such jobs are available, then students may be tempted to take work instead of completing

their studies.

The projects also aim to distinguish academic unemployment according to type of education, sex and lenght of time. The increase in unemployment generally in Finland has been noted to depend primarily on the fact that the duration of unemployment has risen whereas there has been no significant change in the actual number of unemployed (Eriksson 1980, 1984), Whether this same phenomenon also applies to academic unemployment has not so far been investigated.

The other research project "The Academic Labour Market in Finland" aims to provide a broader overview of the economic relations between the labour market and higher education. Extensive structural changes have taken place on the labour market and also within different fields of employment, and these have affected the relative development of wages and salaries. Differencies in salary levels for persons with an equally long education behind them may depend on the type of education but the influence exerted by the occupation itself remains unstudied. Similarly, it is also the intention to study possible changes in mobility, i.e. the labour market´s ability to adapt to changing demands.

The main changes in the academic labour market in Finland concern the number of people with a higher education, the distribution between the sexes and salary trends.

The number of persons with a higher education engaged in gainful employment was approximately 125 000 in 1971 and 227 000 in 1980. The proportion of men dropped between the same years from 58.9 per cent to 52.8 per cent. If only people with an undergraduate level of higher education are taken into account, the figure rose from approximately 73 000 to approximately 130 000, and the proportion of men fell from 64.5 per cent to 58.3 per cent. Among the different categories of persons with a higher education the proportion in 1971 was 51.0 per cent for those

with the lowest level, 52.1 per cent for those with an undergraduate level, 69.2 per cent for those with a graduate level and 88.7 per cent for those with postgraduate higher education. In 1980 the corresponding figures were 45.4, 44.8, 64.4 and 84.8 per cent.

The 1970´s also meant a clear decline in real incomes for academically educated people in the OECD countries. It has been suggested that the reasons for this deterioration comprised changes in the supply of and demand for educated labour, solidarity in salary demands, the public sector´s role as an employer and the higher proportion of women among the educated. In Finland the pattern was much the same even though the economic crisis did not hit Finland as hard as many other countries for a number of different reasons.

Comparable material for Finnish conditions is available for the years 1971 and 1980. Real incomes for all groups of employed people increased during these years, and for those with a lower level of upper secondary education (10-11 years), for example, they rose by 15.9 per cent. For persons with higher education, however, there was a sharp decrease. For persons who had received the lowest level of higher education (13-14) real incomes dropped by 15.9 per cent, for those with an undergraduate level (15 years) by 14.6 per cent, for those with graduate studies behind them (16 years) by 21.1 per cent and for those with postgraduate studies by 22.7 per cent.

The corresponding figures for men alone show a similar downward trend, i.e. 11.1, 15.0, 19.1 and 22.1 per cent. The increase in the number of women with higher education exerted only a marginal effect on the trends in real incomes for all persons with a higher education.

Despite this considerably more even distribution of incomes there still exist large differences in taxable income (before transfers) between the different educational groups. If, for

example, the level of income for people with a lower level of secondary education in the year 1980 is assigned the value 100, then the figures for the groups with a higher level of secondary education is 129, for the lowest level of higher education 153, for those with undergraduate studies 170, for those with graduate studies 244 and for those having completed postgraduate studies 300.

A more detailed analysis of these trends and a study of the underlying causes requires a distinction between and classification of the type of education, sex and occupation. The range of incomes between the different groups is large and preliminary results indicate substantial differences in the way incomes have developed over the years.

Although a certain evening out in income has taken place, men with graduate education in the medical sector (dominted by doctors), for example, still received the highest payment in 1980. If the level of income for men with a humanist or arts education is assigned a value of 100, then those with an economic, legal or social sciences education have a level of 128, those with an agricultural or forestry education also 128, those with a technical or scientific education 132 and those in the medical sector 187.

As far as income trends for men are concerned, it may be noted in general that those with an economic, legal or social sciences education have fared relatively better than those with a humanist, arts, technological, scientific or medical education. The following decline in real income, for example, may be noted in the case of men having completed graduate studies: in the behavioural sciences -26.5 per cent, in biology -26.4 per cent, in mathematics -23.0 per cent, in literature -22.1 per cent, in engineering -21.0 per cent, in architechture -14.9 per cent, in medicine (doctors) -25.6 per cent and in dentistry -20.8 per cent, in economics, law and the social sciences -16.1 per cent and, among these, those with a degree in political science -7.4

per cent, and in agriculture -9.1 per cent. It is therefore quite clear that the economic rewards of a higher education have declined drastically and that the calculations of the value of higher education which were based on unchanged relations between those with an education and those without are no longer relevant. The extent to which this negative trend has affected men's, in particular, interest in higher education and what the consequences are for education of the changed income relations still remains to be studied.

The academic labour market is characterised by an increasing proportion of women. Income differences between the sexes are, nonetheless, large even among those with a higher level of education. Nor way any decrease in these differences visible during the 70's. On the other hand, the gap has not increased, either, despite the increase in the number of women. Income differences between men and women in gainful employment in 1971 were for those with the lowest level of higher education 1.50:1, with undergraduate studies 1.66:1, for those with graduate studies 1.49:1 and for those with a postgraduate degree 1.38:1. The corresponding figures for 1980 were 1.61:1, 1.51:1, 1.51:1 and 1.34:1. For all people employed the figure was 1.47:1, indicating that income differences have little relation to the duration of education.

The difference in type of education, on the other hand, is striking. In lowly paid branches, i.e. those with a humanist or arts education (where women account for 65 per cent of the workforce) and teaching (women 81 per cent) the differences in income between the sexes are comparatively small. In the case of those with graduate studies behind them the ratio is 1.20:1 and 1:17:1. In well-paid sectors the proportion of females is smaller and the differences in income large. Women with an equally high level of education do the poorer paid jobs within these branches. In agriculture and forestry, for example, the proportion of men is 72 per cent and the salary differential between the sexes 1.72:1, in economics, the legal field and the

social sciences men account for 65 per cent of the total and the differential is 1.70:1, and in technology and the natural sciences the proportion of men is 82 per cent and the differential 1.59:1. It is clear that changes in the proportion of men and women within different types of education affect the relative incomes of each group. One very interesting question would be to study how changing sex distributions on the labour market in the future are likely to influence the salaries for those with a higher education and how the unequal distribution between the sexes in different branches will affect incomes between the branches.

The research projects described will, it is hoped, provide information about the changing relations between the labour market with its changing demands and needs and higher education, its extent and direction. Planning has also begun on a wider project, financed by different funds, "Efficiency in Higher Education"[1] and on a project dealing with questions of financing. It would seem that questions involving the economics of education will play a more significant role in the Finnish economic sciences in the near future. Although there exists at present no specifically Finnish tradition in the economics of education, the prerequisites for the creation of such a tradition would now appear to exist. Since there are considerable similarities between the Nordic countries when it comes to higher education and the labour market, its structure and mode of functioning, strong support from the research traditions in the other Nordic countries, and particularly in Sweden, can be expected.

1) This project is carried out by Seppo Hölttä, at the Department of Economics, Turun yliopisto, and it is financed by the Yrjö Jahnsson Foundation and the Foundation for Research in Higher Education and Science Policy.

REFERENCES

Alt, H. & Ylihuttula, P. 1979. Korkeakoulutetun työvoiman kysyntä ja tarjonta koko maassa ja Pohjois-Suomessa vuosina 1976-90. (The demand and supply of university trained manpower in the whole country and in Northern Finland in 1976-90.) Oulun yliopiston kansantaloustieteen laitoksen julkaisuja 19. In Finnish.

Anckar, O. 1976. Finansieringen av den högre utbildningen. (The Finance of higher Education.) Publications of the Research Institute of the Åbo Akademi Foundation 14. In Swedish.

Anckar, O. 1979. Utbildning, yrke och inkomster. (Education, occupation and earnings.) Handelshögskolan vid Åbo akademi. Företags-ekonomiska institutionen. Memo-Stencil 31. In Swedish.

Arrow, K. 1973. Higher education as a filter. Journal of Public Economics 2, 193-216.

Eriksson, T. 1980. Tillströmningen till arbetslösheten och arbetslöshetens varaktighet i Finland 1968-1979. (The inflow to unemployment and the duration of unemployment in Finland in 1968-1979.) Meddelanden från Statsvetenskapliga fakulteten vid Åbo Akademi A 154. In Swedish.

Eriksson, T. 1984. Den finländska arbetslösheten struktur. (The structure of the unemployment in Finland.) The Journal of the Economic Society of Finland 3, 181-190. In Swedish.

Kolari, R. 1982. Korkeakoulututkinnot ja opintojen keskeyttäminen 1966-1979. (University degrees and interruption of studies 1966-1979.) Central Statistical Office of Finland. Studies 84. Helsinki. English summary.

Lindström, K. 1981. Selvitys opisto- ja korkeakoulututkinnon suorittaneiden työllisyystilanteesta vuosina 1976-1980. (A study of the unemployment situation for persons with university education in 1976-1980.) Turun yliopisto. Opintoasiain toimisto. Moniste. In Finnish.

Ojamo, M. 1979. Akteeminen työttömyys 1970-luvulla. Koulutusryhmätarkastelua. (Academic unemployment in the seventies.) Helsingin yliopisto. Opintoasiaintoimisto A 13. In Finnish.

Roslin, B. 1973. Kostnadsökning och förvaltningsexpansion. (Rising costs and expansion of public administration.) Acta Academiae Aboensis, ser. A Humaniora, 42, 3. Åbo. In Swedish.

Stiglitz, J. 1975. The theory of "Screening", education and the distribution of income. American Economic Review 65, 283-300.

Viren, M. 1979. Human capital and wage differentials in a dynamic theory of the firm. Commentationes Scientiarum Socialium 13. Helsinki.

Viren, M. 1974. Korkeakouluopetuksen investointien tehokkuusselvitys. (An analysis of the efficiency of investment in higher education.) SITRA, A 19. Helsinki. In Finnish.

PART II

YRJÖ-PAAVO HÄYRYNEN
ACADEMIC CAREERS STUDY 1965-83: ACCOUNT OF LIFE COURSE

HANNU PERHO
THE CONNECTION BETWEEN VOCATIONAL ORIENTATION AND VOCATIONAL COMMITMENT, CAREER CHOICE SATISTACTION AND CHOICE OF A TEACHING CAREER IN THE HUMANITIES AND NATURAL SCIENCES; A FOUR-YEAR FOLLOW-UP STUDY

MAURI PANHELAINEN
STUDENTS' MOTIVATIONAL BACKGROUND AND THEIR ORIENTATION DEVELOPMENT DURING STUDY YEARS

RAIMO MÄKINEN & ANTERO MALIN
EFFECTS OF A DEGREE REFORM ON DROP-OUT AND DURATION OF STUDIES AT THE UNIVERSITY OF JYVÄSKYLÄ

ANSSI HYVÄRINEN
THE SCHOOL OF ECONOMICS AND THE FORMATION OF MANAGERIAL CAPABILITY

Yrjö-Paavo Häyrynen

ACADEMIC CAREERS STUDY 1965-83: ACCOUNT OF LIFE COURSE

ABSTRACT

This paper introduces a 17-years follow-up study about University applicants: The Academic careers study. Its background was the Student Research Programme starting from the application to Helsinki University in 1965; in 1980, this material was rearranged and 1400 of the earlier subjects' picked for the follow-up study: 800 of these persons returned the questionnaire which was sent by mail. The aim of this follow-up procedure was to examine the predictability of the earlier career orientations; the outcomes of different life-choices; the differences between the vocational development of educated males and females; and the influence of university experience upon the life-course. The claim is that the significance of higher education should be analyzed longitudinally, studying the role of education, the pattern of social change, the change in the role of the intellectuals, and the nature of individual career development in the same social context. The three main sub-groups of the follow-up study are the basic sample, who had participated in the student survey both in 1965 and in 1969 (Chiefly university graduates); a sample of those who in 1965 were rejected in the admission procedure; and those who were indentified, in 1982-83, on the basis of their creative or influential life outcomes. This paper reports the implementation of the longitudinal study and illuminates some of its preliminary findings: the background data, types of career sequence, interests types and occupational functions (Holland), and university recollections of different fractions of these respondents.

1. Introduction

What, in the last analysis,is the significance of higher education: does it develop individuals or promote change in the professions? How are university experiences involved in the subsequent life course of the graduate? In this age of scientific-technical revolution the prestige of theoretical knowledge grows, while at the same time change in society is rapid and

unpredictable. New means of producing knowledge are continuously being evolved: learning by doing, learning by participating, by discourse, by experience. Against this background the prevailing mode of instruction in the universities seems rigid. The feed-back from life course to the development of training is slow.

In these times of rapid change attention has turned increasingly to the possibilities afforded by the longitudinal approach in investigating the influence of training and education. There are nevertheless but few long-term research projects under way in the sphere of higher education: mention may be made of that by Anderson et al. (1982) in Australia and Kenkman & Titma (1983) in Estonia. In the following an account is given of a project undertaken in Finland covering the subsequent life course of those who matriculated in the 1960s: the Academic Careers Study. Its point of departure was application for admission to the University of Helsinki in 1965, its closure the position of the subject in 1982 or 1983. At the level of the individual the inquiry sought to shed light on the kind of careers taking shape as a result of the choice; at the social level interest centres on the processes by which the educated classes and their various fractions in the 1980s have been formed.

In a generations chart the graduates involved in this study belong to the large birth cohorts of 1945-1947, who by the mid-sixties were passing from the sixth form to further education. Their arrival led to a situation of overcrowding in the universities "There were too many of us", was the present comment of one subject. This same period saw the emergence of student radicalism. Those who completed their first degrees at that time were among the last generation to study under the old traditional system. Since the outcome of the degree reform carried out in the 1970s is a matter of considerable controversy it may be appropriate to ask how that earlier generation assessed the significance of their studies.

At the beginning of the 1970s the public administration and service sectors in Finland underwent a process of particularly rapid expansion. A large proportion of the subjects involved in this study took up employment in this growing structure and its increasing range of functions. The connection between their training and their profession was no longer as clear to them as was the case in the traditional vocations. On the other hand the economic crisis which set in towards the end of that decade has for its part hampered the career development of this academic generation. At the time-point of the follow-up they were on the average 36-37 years of age, that is in mid-career.

The central questions in longitudinal research concern the relationship between change in the individual and developments in society. The method of approach has generally been determined by the logic inherent in experimental research and a kind of cause and effect model: change has been studied by statistical differentiation among the various factors underlying life course and their proportional affects on this. The appropriateness of such a model in the case of individual lives has however been questioned (White 1981, 15). A counterpart may be seen in the ecological perspective of life courses (Elder & Rockwell 1979) or the method of creating an overall picture on the basis of biographical data (Bertaux 1980). The essential point is thus to see developmental aging, career development, selection for training and belonging to cohort as different facets of the same historical process. Statistical investigation was not rejected for the present purpose - it constitutes a useful means of classifying life situations or charting the outlines of change. The objective was nevertheless to combine psychological and sociological data and interpret the relationships observed against a social context - that of those matriculating in the 1960s and living in the Finland of the 1970s.

2. The 1960 student research programme

With the sharp rise in the numbers applying for admission to the universities in the 1960s, a system of selection quotas was introduced in most subjects. Nevertheless for example in the humanities and the social sciences the result was overcrowding, and with it a diminishing of study motivation. Students lamented the lack of integration between their studies and the society in which they must live and work. In this situation the Committee on Planning Higher Education and the then Vice Rector of Helsinki University Heikki Waris became convinced of the need to review the whole system of university application and selection. It was feared that the current mode of screening was reducing the number of genuinely interested students, and the question was also raised of the influence of this process on the social composition of the educated classes. The present writer was appointed supervisor of the investigation then undertaken.

The inquiry was made in conjunction with applications for university places in 1965. Some 7 000 applicants filled in the questinnaire drawn up for the purpose. A further 2000 were studied by testing methods (Häyrynen 1970). The Student Research Programme thus constituted an extensive exploration of the universities and academic studies in the years 1965-73. The idea of a follow-up emerged in the early 1980s. A summary of the results of the various phases of this project was made when the Academic Career Study was launched (Häyrynen 1984). The findings were used among other things in the planning of pedagogic objectives for the degree reform and student selection in the faculties of medicine. The main finding was that self-selection determines - or at least in the 1960s determined the greater part of the differentiation among students in the various disciplines.

The basis of the Student Research Programme was the theory of Holland (1962) concerning vocational personality types and the

framework evolved by Super and Bachrach (1957) for the study of academic careers, where the gradual crystallization of the individual's self-conception in relation to his chosen career objectives finds emphasis. Rosenberg's study of occupational values (1957) and the work "The Student-physician" edited by Merton et al. (1957) were also instrumental in directing the planning of the field study. Attention was further paid to the significance of study climate as already brought out in the work of Stern.

Differentiation in vocational orientation was not exactly the same in men and women, but a number of factor analyses brought out six main modes of orientation: academic-intellectual motivation, orientation to creative self-expression, emotional human contact, organizational self-assertion and quantitative-systematic interests. Further to these a pattern of degree of resolve in choice of career was to be discerned, this connected among other things with the age-point at which the applicant's vocational objective had been formulated. The orientational factors distinguished among applicants for different disciplines and also showed relationships with social background and sex.

Applicants' success in the matriculation examination was connected with their academic-intellectual motivation. On the other hand a variety of types of school success could be distinguished. Expressive-impulsive orientation was found to correspond to the traditional notion of the "creative" college student (Häyrynen 1983). Selection criteria in the 1960s were still sufficiently lax for ill-suited types of student - whose matriculation performance was usually mediocre - to gain admission to a number of departments in the universities.

This study of matriculated applicants revealed choices to be largely determined by stereotyped conceptions of the various subjects and occupations. The vocational images evinced by boys and girls resepotively appeared to be based on different principles: girls placed most emphasis on the social and emotional content of professions. while boys differentiated among them

more in terms of level of qualification, financial advantage and status.

The studies of self-selection and study climate and the charting of the stereotypes formed regarding the professions gave rise to a selection circle hypothesis which may be illustrated as follows:

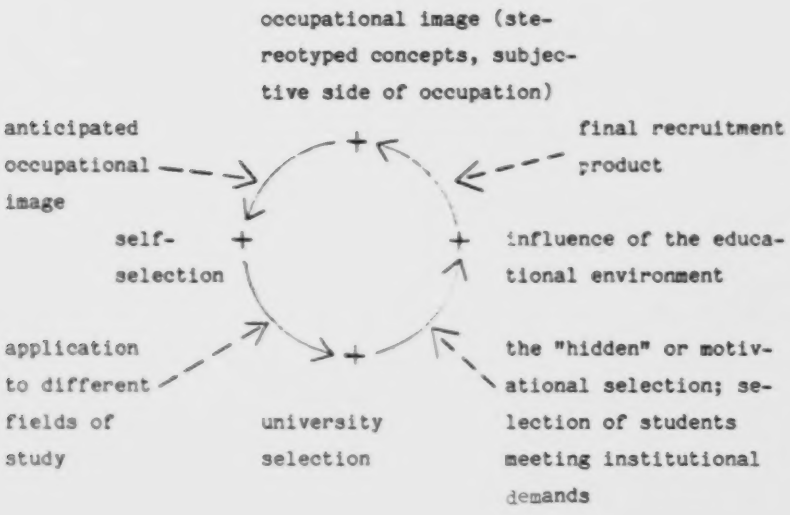

occupational image (stereotyped concepts, subjective side of occupation)
anticipated occupational image
final recruitment product
self-selection
influence of the educational environment
application to different fields of study
university selection
the "hidden" or motivational selection; selection of students meeting institutional demands

FIGURE 1. Selection-circle model

According to this theory the vocational choices and selfconceptions of school leavers and the educational climate in the various faculties reflect certain tendencies in choice which characteristically lend support to the traditional academic career system (Häyrynen & Perho 1975). This "circle" is most clearly seen in the process of selection by which students find their places in the faculties of medicine and law. Nor is this merely a question of so-called anticipatory socialization. The circle also apparently embraces students whose backgrounds place them in the upper strata of society, so that the selection trend

is associated with the social reproduction of the professional hierarchy. It is possible that other modes of selection circle are also involved (cf the anomalous process to be described in a later section).

This selection circle with its sustaining function in the hierarchy of professions is evidently best manifested in conditions where the professional system is rigidly differentiated and static: in a rapidly altering or conflicting structure it is difficult to promote any particular selection tendency and its corresponding interest orientation over the long term. It must however be asked whether the tendency evinced by the circle is manifested in the subsequent careers of persons already placed in work life: if so, then the professions must sustain and reinforce the interests prevailing at selection. This would explain the permanence observed in individual vocational interests: for example the findings of Strong (1951) bespeak a relative constancy of vocational orientation from early college years at least to mid-career. This is associated on the other hand with the conditions of career choice and the stability of career type in those initial years - there were after all no essential changes in the status of the academic professions from the 1930s to the 1950s. Since the 1960s, however, the traditional professions have been in crisis and their prestige has diminished (Houle 1980, Ch. I). It is to be assumed that in a period of transition selection models will also alter and there will be conflicting tendencies in the development of interests.

Such contradictions were in fact already observed in career choices as elicited in the student survey. Among the chief discriminating factors in study climate in the 1960s were the goal direction vs. goal anomie of teaching and the contact vs. aloofness of teachers in relation to students. There was in addition a radicalization in the student communities which in some fields took issue with the professionalism and the specialization represented by teaching staff. Especially in the so-called liberal disciplines both the obscurity of teaching objec-

tives and the socially critical radicalism of the student body presumably contributed to obstruct the realization of the traditional academic models and professional images. The 1969 follow-up revealed that students expected from the universities more purposive orientation towards both society and the world of work. It was also possible to discern the emergence of an anomalous selection circle: students might for example seek admission to the social sciences or to subjects in the humanities qualifying for higher-grade teaching posts without evincing any definity scientific or professional interest. Nor did the uncertainty expressed at selection necessarily diminish as studies progressed. In this ill-defined situation those who coped best were generally students of upper class origin, whose vocational choice and attitudes to study were less subject to pressure.

3. The academic career study

3.1. Objectives

The material collected in the 1960s affords the possibility of a particularly wide range of interesting follow-up studies. Although the applicants for admission to the University of Helsinki do not in themselves represent a uniform cohort, the very size of the material allows of a diversity of approaches. The original objectives of the study are connected with the problems Finnish higher education was faced with in the 1960s. On the basis of the follow-up study planned for the 1980s it will be possible to add a time dimension to those problems and investigate the effects student selection and university training had on the subsequent life course of the individuals involved.

The objective of the Academic Career project was to study in the various vocational and ecucational groups:

- the predictive value of the orientation - goal values and vocational interest types studied in the 1960s in relation now to subsequent career course;
- changes in that orientation and the connection between 'changes and individuals' choices and later life situation;
- the way in which selection for university or study for a particular degree moulds the individual's life course and how different individuals evaluate their university experiences;
- types of career consequent upon university training - "key points" and "time lines" of careers;
- differences between men and women in respect of career course;
- the achievement of eminence and eligibility for the various fractions and types of educated class.

3.2. Theoretical points of departure

A concrete presentation of the problems referred to in the foregoing requires a thorogh conceptual analysis of their nature. The notion of life course involves a conception of their the bold individuals choose the life situations which in turn serve to mould them (cf. Elder 1980; Georgoudi 1983). Mention was made above of the concept of key points in a life course. This is akin to the career anchor concept of Schein (1978), which envisages events in life which serve to crystallize or then to disharmonize career development. Such direction-giving moments have generally two components. In first place they usually fall within a given social time-scheme which determines when an individual must take his decisions and what decisions are prerequisite for the achievement of the desired goal. For example the passage from school to training is such a turning-point in life; another is the situation in which an individual bent on a creative career must decide whether he dare place his own personal achievements before the public - perhaps extremely critical - public eys. Individuals may make various decisions at such points in their lives, and some of these will later prove to have been the key to their life cource.

In studies of change the essential requirement is to distinguish on the one hand the external aspects of life course, those determined in structure by factors in society, and on the other the inner development of the individual. The former include for example the social prerequisites for access to a given career. Prerequisite to practice as a physician is a degree giving the statutory qualification. Whether that degree was the product of excellent or poor instruction, it constitutes an opening to a career whose influence on the individual's personal development may prove very considerable. University training, again, has its effect on the inner development of the individual. This effect has been considered to manifest itself for example in the changes in attitude and in approach to problems evinced during the course of studies (cf. Perry; Astin). The changes observed, however, do not in themselves shed light on the way the student's own reaction to the teaching the receives determines his subsequent development. For example the student movement in the universities of the 1960s brought out a reaction in students which contirubuted to the moulding of certain features in the educated classes to come, quite regardless of the actual content of teaching at the time.

In the development of the subsequent study the question also arose as to whether the self-selection models on which the earlier investigation rested sufficient to cover changes in the life course. Kohn and Schooler (1978, 25) have levelled particularly grave criticism against the anticipatory socialization and self-selection models. They see these approaches to set out from the notion that value orientations and other personality traits are fully established prior to the commencement of a career. Individuals thus select their career, adapt themselves to its demands or else in the best of cases mould the task to suit themselves. The task in question, in other words, does not mould them. In controversion to this Melvin Kohn posits the thesis that work life moulds the entire personality. Kohn's thought brings out the significance of the <u>functional structure</u> of careers for the development of the individual. The notion is

thus associated with the theory of activity which constitutes one of the points of departure for Soviet psychology (see e.g. Leontiev 1977). One methodological problem is how a follow-up study can reveal the structure of life activity which nevertheless moulds the individual in the course of his career. In the present investigations inquiry was made into what functions the individual at work considers the most essential. In the analysis of current life situation the life orientation scale of the Estonian sociologist Mikk Titma (Kenkmann & Titma 1982) was applied.

The difference between the self-selection model and the life activity theory assumes crucial significance in the analysis of differences observed between the career orientations of men and women. The self-selection concept stresses the significance of original sex stereotypes; career differentiation is thus governed by orientations developing at an early stage in the respective sexes. According to the life activity model, on the other hand, decisive significance attaches to the structure of subsequent tasks. Indeed certain research findings reveal that no essential differences are necessarily to be found between the career orientation patterns of men and women working in professions of the same level (Walker et al. 1980). On the other hand it may be presumed that considerable differences prevail in the work tasks of the respective sexes even in the case of the academic professions: women may well be relegated to more peripheral functions and endowed with less authority than men in the same field. Thus the study of gender differences in any case requires that attention be directed to the moulding of the <u>life situations</u> of men and women. To this end the research group engaged upon the present series applied the time-line method used by Inga Elgquist-Saltzman (1982) in a Swedish study of women's careers.

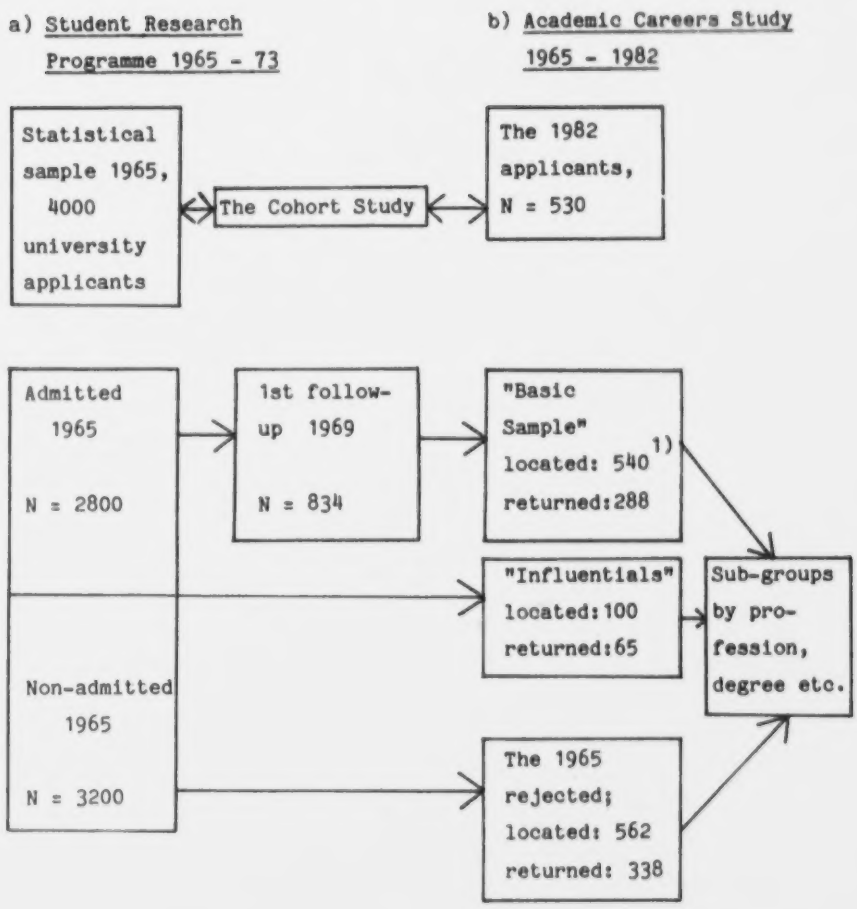
While many psychological and sociological aspects overlap, there is no one theory whose framework would ambrace the entire study. Nonetheless many of the principles which Kurt Lewin (1951)

posited in his field theory studies lend themselves to the analysis of an extensive complex of problems such as this. One point of departure is the movement of the individual in objective situations - the meaningful life space afforded by society - the result of which is his life trajectory. The other component in this process is the inner development of the individual: transitions in personal values and interests. The focal problem is to bring these two processes into concert. Another problem is the analysis of the environmental forces obtaining in the life space, that is, the social context of individual movement. Even if the components in the field do not evince relationships expressible in precise statistical or causal terms, an analysis of the changes involved calls for a synthesis of all: individual aspiration and activity and the social foundations within which these must proceed.

3.3. Procedure and realization

The scheme of the Academic Careers Study is set out in Figure 2. The investigation was thus based on the material and the persons involved in the student survey of 1965s. For the basic sample those were selected for whom data on oth 1965 and 1969, after 4 years of studies were available. A total of 530 subjects were picked from the files; they represented medicine, theology, agriculture, law and the humanities.

A further subgroup was formed from those participating in the 1965 study who failed to gain admission to the field intended. Although some of these subsequently completed university degrees, the group included persons who took lower degrees or did not proceed to studies at all subsequent to matriculation.


a) Student Research Programme 1965 - 73
b) Academic Careers Study 1965 - 1982
Statistical sample 1965, 4000 university applicants
The Cohort Study
The 1982 applicants, N = 530
Admitted 1965 N = 2800
1st follow-up 1969 N = 834
"Basic Sample" located: 540 1) returned:288
"Influentials" located:100 returned:65
Sub-groups by profession, degree etc.
Non-admitted 1965 N = 3200
The 1965 rejected; located: 562 returned: 338

1) A part of the original material unavailable

FIGURE 2. Disposition of Academic Careers Study 1965 - 82

Thirdly one hundred persons were traced out of the 1965 material who subsequently attained exceptional eminence in the world of science, the arts or public life. A number of alternative criteria were applied in recognizing this eminence: published

literature, post-graduate degrees, a political career or membership in a society of art. Of the 100 sought out, 65 responded to the inquiry. Also, since the other groups formed included persons who had achieved the eminence envisaged, their final total was 195.

It was furthermore possible to trace - partly among those in the above-mentioned groups - two samples representative of specific fields. The object was to follow up all those who sought and gained admission to the faculties of theology and medicine in 1965, This complementary sample brought the total of subjects to 1368 /Table 1). Inscluding these additional physicians and theologians the number of respondents to the 1982-83 mail questionnaire was 800.

Addresses for the persons involved were obtained either through the public registry office or from professional registers or - in the case of persons of eminence - from other sources. The response was poorest in the difficulty of locating women who had studied in the humanities; also women screened out in 1965 and subsequently placed in semi-professional fields were less than average responsive to the inquiry. Partly for these reasons the proportion of women respondents in the overall sample was lower (40 %) than their representation in the original body seeking admission to university, where they comprised about half.

TABLE 1. Those selected for follow-up and responding

Fraction	Sought	Responded	(%)	Viable replies
Basic sample	540	300	(56)	288
Rejects	562	359	(64)	341
Influentials	100	65	(65)	64
Total sample	1202	724	(60)	693
Addit. info. by profession [1]	166	106		102 [2]
Whole sample	1368	830	(67)	795 [3]

The respondents cannot be considered a full representation of the respective cohort of the educated class - this in part due to the original composition of the applicant body and the mode of selection of the subgroups. The body involved represents on the one hand a maximum number of different life courses, albeit not in the numerical proportions they occur in the educated classes as a whole. It is nevertheless necessary in many analyses to examine the effect of background factors such as social provenance, sex, profession, which may serve to explain observed trends or similar aspects.

1) Specific field-of-study groups:

Medical	185	130	(70)	126
Theological	142	113	(80)	107

2) Dropout among these med./theol. students: 30

3) Number of these fulfilling "eminent" criteria: 195

3.4. Preliminary findings

3.4.1. Distribution of respondents according to profession and degree

Table 2 sets out the professional distribution of the respondents. The table includes all participants, also the "additional" medical and theological graduates. The classification of professions was that used by the Central Office of Statistics. Over 90 professional categories were represented, these being re-arranged for the present purpose in 12 broader groups. Among the groups distinguished were persons of influence, most of whom fell in the categories of administration, cultural or communications activities, medicine, university teaching, the natural sciences and technology. In the case of certain professional groups (administrators, teachers, physicians, theologians) it is intended to publish separate studies. In the present classification theologians are subsumed in either the clergy or the teaching profession: the group "clergy" also statistically includes a number of women theologians working as lectors in the congregations. The group unemployed (subgroup 12) comprises mainly housewives.

TABLE 2. Distribution of Respondents by Profession (Academic career study: whole material)

Field of profession	All N	All %	Men %	Women %
1. Natural Science, technical	41	5.2	6.3	3.0
2. Physician, dentist	117	14.7	16.8	11.3
3. Nursing, welfare work	39	4.9	1.0	11.3
4. Teacher, rector	99	12.4	7.1	21.3
5. University teacher	36	4.5	5.5	3.0
6. Clergy, lector	58	7.3	10.3	2.3
7. Administrative and law	93	11.7	15.2	6.3
8. Cultural: art, publicity	75	9.4	8.7	10.6
9. Business, organization, trade	105	13.2	18.0	5.3
10. Data proc., economics, statistic	53	6.7	7.9	4.7
11. Office, secretarial	45	5.6	2.2	11.3
12. Home: unemployed, child care	35	4.4	1.0	10.0
Total	796	100.0	100.0 (494)	100.0 (301)

There are certain characteristic differences in the professional distribution of men and women. Further studies are intended to ascertain the extent to which men and women holding the same degree are differently placed, and whether their respective functions within the same field diverge. This is associated with the question of the role of the life activity structure in moulding the orientation of men and women in the course of their careers. Change or permanence of interest will also be examined in relation to the way the individual commits himself to his vocation, how far he is "anchored" in his work.

By a person's "academic life path" is meant the sequence in his life course which proceeds from selection for academic studies through university experience to completion of a degree. It is also a question of the effect upon the life course of university studies, possible attainment of a licentiate or doctorate or again of failure to gain access to a university education.

TABLE 3. Distribution of Respondents by Level and Field of Degree (whole material from Academic career study)

Level of degree	N	%
1. Ph.D.	46	6
2. Licentiate	25	3
3. M.A.	512	64
4. B.A.	88	11
5. Lower degree	103	13
6. No degree	21	3
Total	795	100

Field of studies	N	%
1. Medical science	126	16
2. Theology	106	13
4. Natural science & agricul/forestry	128	16
5. Law	71	9
6. Politics	74	9
7. Hum. & Arts	85	11
8. Techonol.	35	4
9. Welfare & teaching	49	6
10. Commercial or office	100	13
11. No degree	21	3
Total	795	100

The distribution of the respondents in respect of level of degree and discipline is shown in Table 3. It should be noted that only about half of those engaged upon a further degree have by this age completed it. A relatively larger proportion in the fields of medicine and the natural sciences have gained their doctorate; licentiate level, again, relatively more in political science and law. The material obtained here affords a variety of approaches to the profile of the holder of a higher degree, and of those who in spite of a scientific orientation have not proceeded to university level studies.

3.4.2. Analysis of career development

The respondents set out in the questionnaire an annual account of their professional career progress and other events in their development over the period 1965-82. For the purpose of analysing patterns of change this time-span was divided into six periods of 2-3 years. In each of these the most prominent changes affecting the individual's life were examined; change in family status, change of profession, improvement or deterioration in life situation and so on.

In one sample subjects were also asked for an outline of changes in their circumstances in the decade 1970-80; this material has however not yet been sifted. The analysis of career sequence was connected with the ecological approach of Elder already mentioned. From the standpoint of Lewinian conceptions this represents a dynamic approach.

TABLE 4. Type of Career Course in Follow-up Whole Material by Gender. (Classification according to change in life situation in six periods: percentages)

Type of career course 1965-82:	All	Men	Women
1. Draw backs without compensation	8	4	16
2. Even without high-points	12	10	17
3. Initial rise, even sequel	9	9	8
4. Mid-career rise (1974-78)	11	12	10
5. Late rise, 1980s	11	11	12
6. Problems overcome & rise	10	9	11
7. Steady rise throughent	21	22	21
8. Marked advancement in at least 3 periods	18	23	5
Total %	100	100	100
Ind. in classification	781		
(no career info)	(15)		

Table 4 sets out the classification of types of career progress. The mode of classification was arrived at after a series of groupings by statistical methods or other approaches. Figures expressing individual shifts were arranged by statistical means to bring out preliminary cumulations of career changes in certain patterns. For example there was a greater than average cumulation of persons in types where completion of degree was immediately followed by a relative improvement in life situation, with an even subsequent career course. Such a model was to be observed for example in the medical and teaching professions, whereas the career of writer or university teacher rarely followed such a regular course.

As will be seen from the table, many academic careers are characterized by marked rise in a number of phases of life. Apart from this there is a general even rise covering the entire period studied, that is, through to 1982. A career in which no progress occurs - or in which setbacks are not eventually compensated by a positive turn - is evidently not in keeping with the career expectations of the educated.

Table 4 shows differences between men and women in the distribution of types of career development. In first place women's careers are more often even throughout or slightly declining. One reason for this is the more predominant incidence among women of placement in office or similar routine occupations. Possibilities of advancement are also undermined in the case of women by circumstances connected with family life. Secondly there were among women fewer career types characterized by marked promotion in at least three of the time sections studied. This must evidently be ascribed to the cultural obstacles associated with women's career development. Further studies are to be made of types of career course by professional group and in relation to a model of change in interests.

3.4.3. The structure and interest types of the educated

There follows now an account of the possible distinctions to be made among the various groups of the educated represented in the present material. The above-mentioned mode of classification of profession and degree level was applied. This, too, offers a certain picture of differentiation among the educated class. In any analysis of types of educated persons it is however necessary to take account of the influence of political, educational and cultural factors. The "eminence" criterion applied in this study was intended to bring this out. Eminent status as such is not determined by profession itself: there are for example among persons of cultural prominence teachers who quite apart from their professional undertakings write for theatre or film, as there are field researchers without the higher first degree who nevertheless enjoy prestige in their profession.

In the grouping of the educated it was important to take account of the point of emphasis in the activities of influential persons: this was effected by a division according to the field of their production - artistic, scientific and organizational-intellectual, this latter covering politicians, organization leaders and senior administrators. Those without a university degree are to be found predominantly among the artists. A corresponding division was made among the non-eminent group of graduates. They were divided according to profession into (1) scientific-medical, (2) social-pedagogical, and (3) organizational-administrative. The cultural core fraction of the educated class thus comprised the eminent group in the study - who might also be referred to as the "intellectuals" in the traditional sense of the words. In the definition of this fraction other criteria were applied than those used by Marja Järvelä-Hartikainen (1983) in analyses involved in a study of the Finnish class structure. Nonetheless the characteristics of social status would suggest a freer and more independent life situation in the case of the intellectual than otherwise in society. The "non-academic" group embraced a wide range of professions from

TABLE 5. Composition of the Sub-groups of the Total Sample (n=714) and the Percentage of Women by Sub-group and Sub-type (Academic Careers Study 1965-82)

	'Eminent' or Influential Persons[1]				Others: a) University Graduates[2]				b) Semi-academics[3]	
	All	Artistic-Cultural	Research & Academic	Organizations & Politics	All	Scientific-Medical	Soc.-Pedagogic	Organizations & Administr.	All	TOTAL[4]
Number of subjects	190	43	84	63	402	110	167	125	122	714
Percentage of women	20%	33	20	8	43%	43	55	28	53%	39%

1) Classified into the Sub-group and Sub-types on the basis of the major field of productivity
2) Classified into the Sub-group and Sub-types on the basis of profession
3) Persons with lower degrees (nurses, technicians, commercial training) or without post-gymnasium education
4) Total number of completed questionnaires: in calculations incomplete data excluded.
The Follow-up study also gathered data on all physicians and theologists who started their studies in 1965 (see table 2); only those classified as "influentials" (n=27) are included here, in Sub-group 1.

technicians to nurses and persons with commercial qualifications: it functions in this characterization of the educated as a representative of the "new middle class".

The grouping arrived at (table 5) represents one model for the analysis of the educated class. It may eventually be tested by examining differences among the groups envisaged in terms of other indicators. The distinction made between "eminent" and "non-eminent" is not intended to designate an elite; placing in this core is a phenomenon associated with the processes of social selection, and will continue to be conceived of as such. The proportion of women in the various fractions of this class varied. They constitute only one fifth among those classed as eminent, as against an overall proportion of 40 % in the entire cohort. There were also relatively fewer women in the organizational field and correspondingly more in social functions such as teaching and welfare work. This latter group, moreover constituted the least secure fraction in respect of career choice, career development and present life status.

Table 6 shows the original interest types among the various factions of the educated class in 1965, and the grouping of these interests in 1982. The classification was carried out by analysing profile of professional interest: grouping was according to the theory of J.L. Holland: investigative, artistic, social, enterprising, realistic and conventional. The same classification was applied to the replies received in the 1982-83 study. Comparison of the two classifications thus brings out changes in interest over a period of 17 years. A general observation was an average fall-off in the absolute interest scores over the period in question. In contrast there was generally a rise in the professional expectations (which is not discussed here); this would imply an increase in the level of demands made upon the work involved during the life course. Interest type thus expresses the hierarchical position of various interests in the pattern of the individual's orientation; in certain respects this a better indicator of professional orientation than abso-

TABLE 6. Distribution of Professional Interest Type 1965 and 1982 and Main Function in Present Occupation. Academic Career Study 1965-82. Interest Profile and Occupational Function coded according to Holland[1].

Interest type -65	"Eminent" All	Art/publ.	Science	Organ.	Other: graduate All	Nat./med.Sc.	Welf.Teaching	Organ/admin.	Other:non-acad. All
0. Not classifiable	9	8	10	11	8	7	9	9	5
1. Investigative	29	22	46	11	21	35	22	7	6
2. Artistic	14	24	8	10	9	3	15	6	18
3. Enterprising	22	13	15	39	15	18	8	24	14
4. Social	9	13	9	7	22	12	31	14	18
5. Realistic	9	4	8	14	14	15	8	22	19
6. Conventional (office filing)	8	16	4	8	11	10	7	19	20
Total	100	100	100	100	100	100	100	100	100
Interest type -82									
0. Not classifiable	6	12	5	5	12	9	14	14	15
1. Investigative	42	35	64	18	16	21	18	8	11
2. Artistic	14	40	2	13	13	9	18	8	12
3. Enterprising	23	2	16	46	24	14	12	46	21
4. Social	5	-	7	6	23	34	29	6	20
5. Realistic	4	7	4	2	5	10	2	6	7
6. Conventional (office filing)	6	5	2	11	8	3	7	14	14
Total	100	100	100	100	100	100	100	100	100
Type of function									
0. Not given	1	-	1	-	6	1	10	1	10
1. Investigative	39	7	75	16	14	48	1	6	2
2. Artistic	15	60	1	3	1	1	1	-	2
3. Enterprising	25	7	7	64	19	12	6	45	14
4. Social	14	22	12	9	45	20	78	20	20
5. Realistic	2	2	1	2	6	16	1	5	18
6. Conventional (office filing)	4	2	2	6	9	2	2	24	35
Total	100	100	100	100	100	100	100	100	100

1) For fractions and numer. proportions see table 5.

lute interest scores.

The usual procedure in longitudinal studies is to ask how various features alter over a given time-span and what explanations can be found for these changes. This approach easily leads to the characteristics in question being regarded as factors to be explained. It may nevertheless be asked instead how a change in type of interest reflects conditions prevailing in a given period and changes taking place in these. In this case it is pertinent to examine differences in changes in various professional and educational groups and in the respective genders. Table 6 shows that placing in positions of eminence was to some extent associated with original interest patterns: artistic or scientific inclinations - or rather with a combination of these two, that is, disposition to a creative career. Be it mentioned that of the 35 male students who in 1965 showed a marked inclination to artistic and investigative activity (the creativity syndrome), 17 were eventually placed in careers of eminence. In the case of women this interest pattern was less clearly predictive of subsequent career development.

Among changes taking place in the careers of eminent persons it is worth noting a rise in the proportion of the investigative type. In the other fractions the proportion of this interest type declined in the course of life. The activity structure of the life course has thus at least in this case its connections with the development of interests.

Among the scientific-medical section of the cohort there occurred a shift, however, from investigative to social-type interests. This transition presumably reflects the central functions of the ultimate professional function: in the work of a physician the functions connected with meeting people and treating them are often more important than the physical aspect. A more precise analysis reveals the increase to take place in fact explicitly in the social-investigative interest type. Among the social-pedagogical section, on the other hand, no such shift is

to be discerned.

The tabulation also includes the distribution of work tasks by fractions. The degree of importance of functions was based on information by the person concerned. The task which the subject considered his main function in his present occupation was classified in the categories suggested by Holland. Thus the functional structure of the tasks can be compared with the models of change observed in the interest types. Intellectually demanding or executive tasks are most prominent among the eminent core of the cohort (table 6). The proportion of such tasks is lowest among the socially oriented intellectuals, the problematic nature of whose position has already been noted, and among the non-academic section. Within this latter group, however, the functional content of men's tasks appeared to involve a greater degree of independence than women's: a man with a lower degree was more likely to find placing in supervisory or planning functions (in the technical field), whereas a woman with corresponding qualifications would generally be found in relatively subordinate positions in management or office work.

3.4.4. Assessment of the significance of university training

Finally some light may be thrown on the value the various fractions of the educated class attach to their university experiences and the atmosphere prevailing in university studies in the 1960s. The questionnaire gave scope for a free formulaton of assessments of study and the university. Some of the respondents left this point unanswered; some gave a page of analysis of the differences in climate between the 1960s and the 1970s. Classification of the replies was made on qualitative bases.

In the descriptions of the climate of the sixties a number of characteristic expressions were observed. Many respondents evinced a positive image of those times of radicalism, using expressions such as "a time of emancipation", "we were optimis-

TABLE 7. Recollections of Higher Education among University Graduates in Different Fractions of Present Intellectuals; Percentages of Qualitatively Categorized Answers (Academic Careers Study 1965-82)

	"Eminent" or Influential Fraction			Complementary Fraction			
				a) University Graduates:			b) Lower Degrees
a) Educational Climate in the 1960s:	All[1]	Ph.D.s	Higher Candidate's Degree	All	Candidate's Degree, Higher	Lower	All[2]
1. No codable description	14	13	14	15	12	23	59
2. Emancipatory;radical as noted positively	33	30	36	18	21	10	11
3. Scholarly;academic; work-centred	17	17	15	15	17	14	4
4. Flexible;social;general positive expression	17	24	13	22	20	25	8
5. Rigidly academic;restless;negative recoll	18	17	22	30	30	28	16
%	100	100	100	100	100	100	100
b) Personal Importance of Completed Studies:							
1. No cadable information	12	-	12	13	11	22	36
2. Basis for career and present life	37	37	37	38	39	35	40
3. Learned scientific or professional thinking	26	39	24	14	18	4	2
4. World view;general education	11	-	17	13	14	8	5
5. Independence;sociability; general reference	7	8	7	9	8	11	2
6. Useless or other negative evaluation	7	9	4	14	11	20	14
%	100	100	100	100	100	100	100
N	170	47	78	402	296	102	75

1) Semi-academic qualifications excluded (n=20)
2) Those with vocational training after secondary school.

.69

tic", "winds of renewal and new ideas". Academic alienation, again, and rigidity of the system and the inaccessibility of teachers were features stressed in a number of replies. "Good morale", "spirit of comradeship" and the like were the conclusions of students from professional training institutions less subject to the stress of overcrowding - for example agricultural colleges.

Relatively few respondents emphasized the traditional academic mode of life as the ideal of the times. Table 7a gives a grouping of the assessments of some fractions of the graduate cohort: of the non-academic group only those with a lower degree (nursing, commercial etc.) are included. It is notable that positive references to the climate of radicalism were most predominant among those who eventually achieved eminence, and particularly among those influentials who took a basic degree but did not proceed to post-graduate studies. It would thus appear that the experience of the tense atmosphere of the 1960s was central for those who subsequently found their places in positions of influence in cultural or political life.

The open evaluations of the significance of studies were also grouped on the basis of a qualitative analysis. The pattern to emerge is shown in table 7b. The largest group comprises the type of answer where the subject affirms that his studies provided the foundation for his life or career. This type of reply expresses the central conception that without completion of studies many a lawyer, physician or university teacher could not imagine being where he now is. This again reveals the position of an academic degree as a key point: it gives access to functions which without it would remain beyond reach. In this class of replies there was no marked variation among the different subgroups: possibly lawyers and physicians were more apt to lay emphasis on this aspect.

The significance of study in the development of consciousness was stressed above all by those who had proceeded to a docto-

rate. Likewise many professionals - lawyers, chemists, physicians, engineers - mentioned that "even basic studies contributed to the development of a mode of thought suited to their field".

The Anglo-Saxon university emphasizes the significance of academic studies in the development of personality - independence, the development of social faculties and world-view as a result of university education. Such values were not often mentioned by the present cohort as associated with their study experience. Nevertheless for a part of the holders of higher degrees - above all among the eminent and those in the teaching profession - the aspect of social development found emphasis. It is worthy of note that the traditional academic ideals proclaimed by the universities - the academic atmosphere, scholarship, personality growth - found no emphasis in the overall profile of these evaluations. Negative influences appear to have been experienced less by those now in positions of influence than among other university graduates.

4. Focal points for future research

The objective in the present article was to give some preliminary account of an investigation still in progress of the careers of the educated and the problematics of these careers. One notable asset of the study is the time-span it covers: its background is in first place the university of the 1960s and an exploration of conditions prevailing in it, and secondly the scheme of its follow-up. Future studies will concentrate on certain focal points, among them the following:

1. an analysis of creative careers and the "core intellectual": the achievement of eminence, its social background; the creativity syndrome (the investigative-artistic profile) and

its predictive value with regard to subsequent career.

2. an analysis of the influences of university: a profile of the post-graduate; connection of university experience with professional career and type of degree.
3. development of attitudes of the individual to science, to the academic atmosphere and theoretical studies and later contacts with the university.
4. changes in professional values and interests and connection of changes observed with life experience.
5. the structure of life course and transitional types (career model).
6. analyses of specific training and professional groups: physicians, theologians, women in the natural sciences, organizational careers.

REFERENCES

Anderson, D.S., Western, J.S. & Williams, T.H. 1982. Professional socialization in training and work. Canberra: The Australian National University, Research School of Social Sciences. Working Papers in Sociology.

Bertaux, D. (ed.) 1981. Biography and society. London: SAGE Publications.

Elder, G. 1981. History and the life course. In D. Bertaux (ed.) Biography and society. London: SAGE Publications, 77-115.

Elder, G. & Rockwell, R. C. 1979. The life-course and human development: an ecological perspective. International Journal of Behavioral Development 2, 1-21.

Elgqvist-Saltzman, I. 1982. Arbets- och publiseringsplan för projektet IOR (The working and publishing schedule for the research programme 'Idea and reality behind university reform'.) Umeå Universitetet, Pedagogiska Institutionen.

Georgoudi, M. 1983. Modern dialectics in social psychology: A reappraisal. European Journal of Social Psychology 13 (1), 77-93.

Holland, J.L. 1962. Some explorations of theory of vocational choice: I One and two year longitudinal studies. Washington, D.C.: American Psychological Association. Psychological Monographs No. 26 (Whole No 545).

Houle, C. O. 1980. Continuing learning in the professions. San Fransisco: Jossey-Bass.

Häyrynen, Y.-P. 1970. The flow of new students to different fields of study. Annales Academiae Scientiarum Fennicae, Ser. B, Tom. 168. Helsinki.

Häyrynen, Y.-P. 1984. Suomalainen korkeakouluopiskelija - persoonallisuus, suuntautuminen ja opinnot uratutkimuksen valossa. (Finnish university student - personality, orientation and studies in the light of career research.) In T. Ikonen, J. Jussila & K.E. Nurmi (eds.) Korkeakouluopetuksen teoriaa ja käytäntöä. (Theory and practice of higher teaching.) Helsinki: Valtion painatuskeskus, 27-75. In Finnish.

Häyrynen, Y.-P. 1983. Performance, self-concept, and creativity: a discourse based on longitudinal studies about Finnish students. Higher Education in Europe (CEPES) 7 (2), 35-44.

Häyrynen, Y.-P. & Perho, H. 1975. An analysis of the student flow and educational streams of university in the context of educational and occupational changes. Paper read in 3rd International Congress of Higher Education, University of Lancester.

Järvelä-Hartikainen, M. 1983. Palkkatyö ja sivistyneistö - keskustelua sivistyneistön rajoista, luokka-asemasta ja tyypeistä. (Wage labour and intelligentsia - on the limits, types and class-positions of the learned class.) In J. P. Sarola (ed.) Uria ja ulottovuuksia. Professori Yrjö-Paavo Häyryselle omistettu juhlakirja. (Careers and dimensions. Essays in honour of professor Yrjö-Paavo Häyrynen on the occasion of his fiftieth birthday.) Joensuu: Joensuun yliopisto, 28-49. In Finnish.

Kenkman, P. & Titma, M. 1982. Social self-determination of a generation (the study case of Soviet Estonia). Social Sciences 13, 197-210.

Kohn, M.L. & Schooler, C. 1978. The reciprocal effects of the substantive complexity of work and intellectual flexibility: a longitudinal assessment. American Sociological Review 84, 24-52.

Leontjev, A.N. 1977. Toiminta, tietoisuus, persoonallisuus. (Activity, consciousness, personality.) Tranlator: Pentti Hakkarainen. Helsinki: Kansankulttuuri. In Finnish.

Lewin, K. 1951. Field theory in social sciences: selected theoretical papers. New York: Harper & Row.

Merton, R.K. & al. 1957. The student-physician. Cambridge, Mass.: Harvard University Press.

Rosenberg, M. 1957. Occupations and values. Glencoe, I.: The Free Press.

Strong, E.K., Jr. 1951. Permanence of interest scores over 22 years. Journal of Applied Psychology 35, 89-91.

Super, D.E. & Bachrach, B. 1957. Scientific careers and vocational development. New York: Columbia University Bureau of Publications.

Walker, J.E., Tausky, C. & Oliver, D. 1980. Men and women at work: differences and similarities. Journal of Vocational Behavior 21, 17-36.

White, R.W. 1981. Exploring personality the long way: the study of lives. In A.I. Rabin, J. Aronoff, A.M. Barclay & R.A. Zucker (eds.) Further explorations in personality. New York: Wiley, 3-19.

Hannu Perho

THE CONNECTION BETWEEN VOCATIONAL ORIENTATION AND VOCATIONAL COMMITMENT, CAREER CHOICE SATISFACTION AND CHOICE OF A TEACHING CAREER IN THE HUMANITIES AND NATURAL SCIENCES; A FOUR-YEAR FOLLOW-UP STUDY

ABSTRACT

The article discusses the vocational orientation of intending students of the humanities and the natural sciences, together with its component factors and its significance in their study careers. Student selection favours applicants who have made a well-considered, mature choice. Selection does not favour, however, those interested in education and teaching as compared to those interested in other professions.The career choice of candidates seeking admission to studies in the humanities and the natural sciences is more problematic than that of would-be kindergarten and class teachers. Background to these problems of choice is the uninspiring image of the subject teacher's profession, together with a conflict between scientific and educational interests, in which the latter generally takes second place. Commitment to a vocation, satisfaction with choice and resolution to take up teaching as evinced in the final stages of study is predictable on the basis of various factors of vocational orientation in different fields of study. Interest in the profession of subject teacher is thus not without its background of vocational orientation independent of field of study.

1. Points of departure and design of study

This study is part of a programme investigating the vocational and study orientation of applicants to the University of Joensuu in 1976 and the significance of these factors in studies and vocational commitment. The project is a continuation of research into interests, self-concept and vocational choice initiated as an Educational Career Study in the University of Helsinki (Häyrynen 1970). The research tradition applies career choice theory in the elucidation of decision to take up studies, success in entrance and study experience (e.g. Super and Holland), the focal concept being vocational orientation, which embraces self-

concept, interests, attitudes to choice and resoluteness and commitment to choice.

The chief concern in this project in Joensuu involved the three main sectors of teacher training in the universities: class, kindergarten and subject teacher training. In the initial phase study was made for example of overall motivational differentiation between the admitted and non-admitted students and factors influencing this (Seppä 1981). Students were observed from commencement of studies in respect of changes in vocational orientation and connections between these and study success, and of eventual vocational commitment.The study involving class teacher training was published as a doctoral thesis (Perho 1982). It constitutes a detailed presentation of the bases of the research programme in vocational choice theory, methodology and training policy. The work on kindergarten teacher training has also been published (Perho 1983a).

The present undertaking involves students seeking admission to studies in the humanities and natural sciences in the University of Joensuu in 1976 and still studying four years later (1980). The great majority of these students will take up careers as subject teachers. The project was completed before the reform of these fields of study and streaming into subject teacher training and training for other professions. Under the "old system" teaching practice and pedagogic studies formed a separate entity subsequent to subject studies. Choice of a career in teaching was thus left to later stages of study. With the reform, students are selected for teacher training at the latest in their second year, the main object being to integrate subject and educational studies and teaching practice.

Earlier reports on this research programme contain fairly extensive accounts of the career choice and decision theories of Super and co-workers, Tiedeman, Holland, Janis and Mann and Harren, and find them, with certain reservations and supplementations, to be applicable in the case of those aiming at a career

in form and kindergarten teaching. In both Finnish and international studies (Panhelainen et al. 1981 and 1983, Anderson 1974), choice of studies has been found more problematic in the humanities and natural sciences than in clear-cut professional training. The consequences of obscurity of conditions in the choice situation (see Perho 1983b) are intensified precisely in the humanities and natural sciences. Indeed Panhelainen and Malin (1983) conclude from their findings that the 1970s brought a weakening of the motivational situation of students in these sectors. Motivational problems have manifested themselves for examples in difficulties in filling entry quotas and in a considerable proportion of dropout and change of field.

This study considers aspects of entry to the humanities and natural sciences in the light of the so-called selection-recruitment circle model (see Perho 1982). It is sought to objectivize in the subject teacher's profession. It would appear, however, that this particular profession does not in itself constitute a uniform career entity which would crystallize a clear-cut vocational image. For example the observations of Anderson (1974) show choice of this profession to involve a considerable number of arbitrary and constraining factors. Holland, in his classification of professions, has brought precision to the earlier rough division of secondary-school teachers into social-artistic categories by differentiating subject teachers according to the content of their subjects (Holland 1966 and 1973). In the female material of Häyrynen (1970) the profession of secondary-school teacher represented an object of interest distinct from other vocational sectors. Nevertheless this field - in contrast to almost all other areas of interest - did not involve significant personality correlates. The vagueness of the image of this profession is underlined by the observation of Häyrynen and Kekäläinen regarding the career images held by those of matriculation age; the profession of secondary-school teacher belonged among the most familiar, human-centred but colourless professions (1970, 67). It must thus be concluded that investigation of this profession and choice of it will

entail consideration of the content of the particular subject to be taught: education does not sufficiently cover the whole range of teachers in this category. At all events it ought to be possible in the case of humanist and natural science studies as elsewhere to assess what patterns of vocational orientation are favourable to vocational commitment and what are not.

The problems taken up in this study were the following:

1) How do successful and unsuccessful applicants differ from each other in vocational orientation and solidity of choice?
2) What are the vocational objectives, degree of commitment and choice satisfaction of those in their fourth year of study?
3) How do various types of change of vocational goals differ in respect of commitment to choice and choice satisfaction in the fourth study year?

Here a systematic study was made of the commitment and choice satisfaction of those intending to become teachers both in the beginning and in the end of studies and, on the other hand, of students training systematically for other professions and those changing their career objectives, together with factors involved in these attitudinal aspects.

4) What are the connections of school success, vocational and study orientation with level of commitment at various stages of study, and with choice satisfaction and intention to take up teaching as evinced after four years of study?

There now follows a concise account of results; a more detailed analysis is made elsewhere (Perho 1984).

2. Study material

Two materials may be seen to be involved in the various problems taken up in this study. The first comprises applicants for places in the humanities and natural sciences - in other words participants in the entrance examination; the second, those who

commenced their studies in 1976 and were still registered in the university four years later. The two student materials involved might thus be designated intending and persisting respectively. For purposes of analysis both are subdivided into three groups, namely languages (Finnish, English, Russian, Swedish), history and geography, and natural sciences (chemistry, biology, mathematics-physics). The number of respondents among student applicants was 599, that of the "veterans" 59.

Drawing on the paper by Seppä (1981) included in this research series, the orientation and personality images of these groups may be summarized as follows:

> The bases of choice in the language group are weak - the apparent prospects (completion of studies, duration of degree course, eligibility on the labous market) are felt to be problematic. The educational interest of the group is low, albeit highest among the groups training as subject teachers. Predominant interests are humanist-literary; technical enterprise and open-air activity do not attract. In respect of personality traits this group of applicants is prone to anxiety and its level of ambition is low. The anxiety may partly be attributable to the problematic nature of the choice situation, with the feminine stereotyping of a vocationally unadventurous life-course as possible background factor.
>
> In the case of the history-geography group choice would appear to be better grounded and not dependent on predicted advantages of these studies. The rating of human-centred work is low. The geographical proximity of the University has played a role in inclination to take up studies. Interest in educational - artistic professions is low. Human culture interests this group, likewise open-air activity. Prominent interests are in society, ideologies and history and in economic-administrative tasks. Personality traits betray a low level of human interest and a marked "manly"

realism.

The choice of field in the case of the natural science group is more problematic than average; outward prospects do not contribute to motivation. The rating of human-centred activity is lowest in this group - as is also reflected in their lowest scoring on educational interest. No interest evinced in either humanist culture or economic-administrative enterprise. Predominant is a scientific-technical orientation. In personality these students are most intellectual, socially reserved and least human-centred.

Of the various teacher-training groups (form, kindergarten and arts teachers), the humanist and natural science students stood out surprisingly sharply above all in their low educational interest. A further clear difference from the teacher groups "proper" was that in these particular fields interest in the subject content generally exceeded interest in education.

3. Method

The research methods applied in this study of vocational orientation are those used elsewhere in the project. They make it possible for example to trace the whole range of vocational interests - an element lacking in other Finnish studies of the teaching profession. Here, however, the author does not apply the concrete individualized hierarchical analysis of vocational orientation stressed and found viable in earlier studies. One reason for this is the limited size of the follow-up material, in which the incidence of the orientation categories (see Perho 1982, 97) would be indeed minute, while on the other hand the interest in teaching among those intending to take up studies in the humanities and natural sciences must compete with interest in the content of the subject studied. This complicates the operational application of a rational hierarchy of orientation.

Likewise this study - in contrast to the class-teacher section - does not involve an interview on vocational choice.

Vocational and study orientation was assessed by means of questionnaires. At the application stage inquiry was made into basis of choice, qualities of ideal profession (vocational values) and interests. In the second year of studies this inquiry was repeated, however, omitting basis of choice. Study orientation was also assessed in the second year. All questionnaires probed degree of commitment (certainty of choice) and intention to take up teaching. Choice satisfaction was asked at the end of the fourth year of studies. The same questionnaire also covered the nature of vocational choice, vocational fears, dropout intentions and open questions as to the reasons for them.

4. Results

Of those accepted for study courses only some two thirds took up the places offered. The prior dropout was thus substantial and student quotas were not filled. As regards vocational commitment and objectives the absentees did not differ from the remainder of those accepted in the language and the history-geography groups; in the case of the natural sciences those who failed to commence studies included a clear over-representation of applicants with vocational objectives other than teaching. This agrees with the findings of Panhelainen and Malin (1983). Those who commenced studies persisted markedly well, only 15 % of them having dropped out by the end of the fourth year.

4.1. Orientational differences between accepted and rejected candidates

The study choice of those accepted was more often appropriate than that of the rejects, and better grounded and considered. This was not, however, reflected in differences in educational

interest or vocational objective. The greater aptness of study choice in the case of the successful candidates might be seen as a consequence on the one hand of the main screening test, which may well also function as an indirect motivation threshold, and on the other of the weighting in the selection process of school success in the subject chosen. The proportional roles of school record and entrance examination in screening were in most cases 40 % and 60 % respectively as assessed on the basis of the maximum score possible in each.

4.2. Commitment, intention to teach and choice satisfaction at various stages of study

Table 1 shows net change in commitment, table 2 change of vocational objectives in the panel material.

TABLE 1. Percentages favouring given vocational objectives as ideal prior to commencement of studies (1976), in second year (1978) and fourth year (1980) by analysis groups

Group	1976	1978	1980
Languages	65	50	35
History-geography	63	43	47
Natural sciences	33	67	45
Total	53	53	42
	(57)	(43)	(57)

TABLE 2. Percentages intending to take up teaching prior to commencement of studies (1976), in second year (1978) and fourth year (1980) by analysis groups

Group	1976	1978	1980
Languages	55	62	75
History-geography	50	45	41
Natural sciences	65	75	70
Total	57	61	63
	(58)	(36)	(57)

All in all, little change took place in commitment to the profession envisaged during the course of the studies chosen. By groups, on the other hand, there were diverging tendencies. In languages commitment would appear to diminish. In this same group, on the other hand, the proportion intending to take up teaching was seen to increase. As the vocational objective crystallizes as the teaching profession, vocational commitment diminishes; this would point at least in some measure to an element of constraint in objectives in the final stages of study. In the history-geography group about half would seem to be committed to their vocational objective at all stages, while among the natural science students a slight increase in commitment was found as studies progressed. In the history-geography group intention to teach appeared to remain fixed in about half of the students, while in the natural science group there were always at least two thirds intending to take up a teaching career.

Choice satisfaction was more or less the same in all groups. A little over a third were very satisfied with their choice of study field, 40-45 % satisfied with reservations, with about one fifth not knowing or dissatisfied.

4.3. Main types among fourth-year students intending to teach

In respect of the third research problem a brief account follows of the level of commitment and satisfaction with choice according to vocational objective in the fourth year of studies. Whatever had been the study objective prior to commencement was no longer of significance for the commitment-satisfaction situation in the fourth year. Attention may be further confined to those intending to teach, since others were generally clearly committed and content with their decision. The choice situation of these others in their fourth year may thus be regarded as positive.

With one exception those intending to take up teaching fall into the following types:

1. Committed and satisfied (n=9)

The choice in the case of the language students in this category is resolved, self-reliant and realistic. Problems in teaching are foreseen, for example dangers of routine and "getting into a rut" are a source of concern. The overall attitude to teaching is nevertheless positive. Conceptions of the conditions requisite for good teaching and teacher qualities are sensible: these students do not expect to be perfect. Commitment to a teaching career is personal and well-grounded.

Candidates in the history-geography field are concerned about employment prospects and working conditions - here control and disciplinary problems are foreseen, this possibly a reflection of uncertainty choice. Teaching is nevertheless seen as a positive challenge.

The natural scientists likewise mention problems envisaged in employment and working conditions. Self-confidence appears to increase in the course of studies.

The committed and satisfied group as a whole proves heterogeneous

2. Uncommitted but satisfied (n=15)

This entire group is characterized by anxiety over work prospects and employment as a whole.

Here the language students are undergoing a process of growth and maturation for a teaching career. They are not yet sufficiently mature and self-reliant, but the outlook is positive, hopeful and realistic. The ideal image of the teacher is seen to be too demanding, which induces uncertainty. In most cases, however, these students are overcoming this source of tension.
Of the history-geography students no clear image emerges.

Among the natural science students the biologists are not concerned at the prospect of teaching, seeing in it at least some measure of challenge. Students of mathematics and physics do not appear particularly enthusiastic at the idea of this career but do not foresee any serious threat or problems in it.

3. Uncommitted and dissatisfied (n=11)

These students have in common a concern over employment as well as serious doubts as to their adequacy in capacity and interest for teaching. Their vocational orientation is characterized by uncertainty and the sense of a formidable gulf between the teacher ideal and their own qualities. Intention to teach is forced and constrained instead of being a matter for enthusiasm and anticipation.

4.4. Connection between orientation and commitment, choice satisfaction and intention to teach

There were markedly poor correlations between commitment, choice satisfaction and vocational objectives. In languages and the natural sciences those training for career other than teaching were more than average committed to their vocational objectives. In the language group commitment and choice satisfaction were positively correlated. The independence of criteria would indicate tensions between objectives, commitment and satisfaction. The commitment criterion may be regarded as an indicator of interest in content. Choice satisfaction reflects the external and instrumental advantages of study and career prospects. Vocational objective embraces, in addition to the foregoing elements, also the compulsion to choose and the limitation of choice realised at the latest in the course of studies.

Each group has its own orientation model in respect of commitment, choice satisfaction and vocational objective at close of

studies. Thus for example intention to take up subject teaching does not have an orientational background independent of field of training.

Moreover, commitment of even the same group is predicted by different orientational factors at different stages of study. This is partly due to the fact that vocational objectives change in the course of studies, with a resulting change in the significance of commitment. A further explanation is the realization and maturation of commitment in the course of studies.

Final year commitment was apparently less well predicted by pre-study orientation than by second-year orientation in the language and natural science groups. In the case of the history-geography students orientation both pre-study and second-year was equally associated with ultimate commitment. Choice satisfaction is predictable more or less equally on the basis of orientation prior to commencement and in the second year. Orientation in the second year appeared to predict fourth-year vocational objectives better than pre-study orientation in all groups.

The orientational system in students would appear to mature and crystallize in the course of studies at least in the language and natural science groups, even though there is generally no increase in the availability of professional experience and the vocational choice situation is not necessarily in any way actualized during the second year of studies. The maturation of language students would seem natural in that their choice situation prior to studies is particularly problematic and they are marked by anxiety. In such circumstances study and the break from home in themselves compel to independence and vocational identity.

The orientational background to criteria in the fourth year was partly particularly vivid and clear-cut, partly difficult to interpret and obscure. Here a concise account may suffice of the

orientational background to intention to teach as evinced in the fourth year of study.

In the language group the interest of those heading for a teaching career in the work of teaching as in work involving social and psychological training was both prior to studies and in the second year more intense than average. Orientation to teaching in the final stages of study was thus not arbitrary even if in many cases it was somewhat constrained.

Among the history-geography students the orientation of those intending to take up careers other than teaching appeared well-grounded: prior to commencement of studies they were more interested than average in developing social awareness,in humanist public service (museums and libraries) and in study of philosophy and history. In the case of those intending to become teachers the orientational pattern was less well-defined and gave an impression of randomness.
Of the natural science students those intending to become teachers were those with best school success. The point here, however, is that the biologists were superior to the rest in school success and intended - if not committedly - with one exception to take up teaching. Those headed for careers other that teaching had chosen their field of studies deliberately and placed more than averge value on both creative work and the realization of ideals. Evidently, then, teaching in the natural sciences is not envisaged as a channel for creative or persuasive activity.

5. Discussion

The results of the research programme indicate that career choice for those taking up studies in humanities and the natural sciences is markedly more problematic as the case for those seeking training as class or kindergarten teachers. The problem springs from the colourless nature of the vocational image of the subject teacher and from fears and anticipated problems

associated with this profession. In spite of its familiarity this career is envisaged as uninteresting and dull. Evidently an uninspiring and stereotyped image of the subject teacher is what school-age experiences convey. This may be a result of the search for identity associated with the pupils' stage of development, this often entailing opposition to authority figures, parents and schoolteachers. Such an attitude may readily involve a distortion of perceptions of the teacher's vocational role, which in turn will affect choice of career. This image formed by the students here diverges from research findings, according to which teachers are relatively satisfied with the content of their work (e.g. Ruohotie 1980).

It would seem fully justifiable to speak of a crippling of the motivation of students in the humanities and natural sciences in the 1970s (cf. Panhelainen and Malin 1983). A weakening of commitment above all in the predominantly femaly language sector bears out the observation made in the Educational Career Study of a fall-off in commitment among women during their studies (Häyrynen and Perho 1978). Empirically this weakening may of course be associated with the fact that a proportion of women mature in their vocational choice as studies progress and only then form solid interests beyond the range of their own study field.

Almost one third of those who in their final study year intended to take up teaching had experienced vividly a gulf between their own anticipated teaching capacities and the teacher ideal they had formed in the course of their studies. Discussion of subject teacher training idealizes and stresses perhaps to excess the educator qualities of the subject teacher at the expense of his expertise and interest in his subject. Such emphasis would override the greater interest most students of languages and natural sciences were found in the present study as elsewhere to evince for the content of their intended field than for the teaching of that content to others. Especially in the new form of subject-teacher training there is a danger that the expertise

associated with the old system will be watered down into the acquisition of mere didactic gimmicks.

Choice of studies in the humanities and the natural sciences involves, as expected, more motivational screening effect than is the case with form and kindergarten teacher training. Though the differences are not particularly marked, the choice of study field and career would seem better grounded and more mature in those accepted for studies than among the rejects. This is influenced by the nature of screening. The fact that the choice in those accepted was more apt may be seen as a consequence of the entrance examination included in the screening process, which functions as an indirect motivational threshold and thus eliminated random and unmotivated applicants. Reward of school success in the subjects chosen for studies would appear to contribute in the same direction. The selection procedure may be considered appropriate, particularly in the case of those envisaging careers other than teaching. Selection does not favour those interested in teaching and education, although considerable emphasis was placed on the entrance examination in screening (cf. Panhelainen and Malin 1983).

All in all there was little change during studies towards a teaching career as vocational objective. Here is a clearly different finding from that of Panhelainen and Malin (1983). In the final stages of study the vocational commitment of those intending to teach was moreover weak in about one third, and the level of career choice satisfaction low. This result would point to an element of constraint and reluctance in choice of this alternative, which is detrimental to the profession. The choice made by others than intending teachers was clearly more frequently committed, and satisfaction with the choice made was higher than among would-be teachers.

Students of languages, history-geography and natural sciences had each their own specific background model to commitment, choice satisfaction and vocational objective in their final

study year. Thus for example intention to teach has a background of vocational orientation factors diverging according to field of training and evidently according to subject. Just as it has not proved possible in Finnish research projects to indicate a clearly defined personality background to interest in subject teaching, no orientation model would appear to obtain independent of field of studies in the case of commitment and choice satisfaction. This, too, would seem to indicate that one cannot speak of a generalized image of the subject teacher; this profession must be envisaged and analysed with specific reference even to the particular subject taught.

Connections between orientation and criteria point to a maturation of orientation and commitment during studies, a process apparently little influenced by studies themselves. Maturation of orientation in the early stages of study suggests that at least a part of the students benefit from the possibility of deferring choice of career to their second year. This is not to say that a considerable proportion of students in the humanities and natural sciences would not be capable of well-considered and appropriate choices even prior to commencement of studies. One potential advantage of the new form of subject-teacher training may be seen in the opportunity provided of experience relevant to the profession and of testing capabilities at an early stage. It would be important here to render these experiences of teaching as close as possible to the realities of form and school - a situation not easily realisable in the practice schools affiliated to the universities.

REFERENCES

Anderson, D. S. 1974. The development of student-teachers. A comparative study of professional socialization. New patterns of teacher education and tasks. Paris: OECD.

Holland, J. 1966. The psychology of vocational choice. Waltham, Mass.: Blaisdell.

Holland, J. 1973. Making vocational choices: a theory of careers. Englewood Cliffs, N. J.: Prentice Hall.

Häyrynen, Y.-P. 1970. The flow of new students to different university fields. Helsinki: Suomalainen tiedeakatemia.

Häyrynen, Y.-P. & Kekäläinen, T. 1970. Ammattien ulottuvuudet. (Dimensions of professions). University of Helsinki. Institute of Social Policy. Publications 10. In Finnish.

Häyrynen, Y.-P. & Perho, H. 1978. A motivational dilemma of higher education - on the importance of the motivational development and the solidity of vocational choice to student learning and university pedagogics. Paper presented 4th International Conference on Higher Education, Lancaster 29th August - 1st September, 1978.

Panhelainen, M. & Malin, A. 1981. Korkeakoulutukseen hakeutuminen humanistisella ja luonnontieteellisellä koulutusalalla. (Students' career choice in the humanities and natural sciences). University of Jyväskylä.Institute for Educational Research. Bulletin 175. English summary.

Panhelainen, M. & Malin, A. 1983. Opiskelijoiden valikoituminen humanistisiin ja luonnontieteellisiin korkeakouluopintoihin ja ensimmäinen opintovuosi. (Selection of students in the humanities and natural sciences and their first year in higher education). University of Jyväskylä. Reports from the Institute for Educational Research 346. English summary.

Perho, H. 1982. Ammatti- ja opintosuuntautumisen luonne ja merkitys luokanopettajan opinnoissa. (The nature and significance of vocational and study orientation in class teacher education). Publications of the University of Joensuu A 23. English summary.

Perho, H. 1983a. Ammatti- ja opintosuuntautumisen yhteydet opintomenestykseen ja ammatilliseen sitoutumiseen Joensuun ja Savonlinnan lastentarhanopettajankoulutuksissa. (Vocational and study orientation and their relation to study performance and vocational commitment in kindergarten teacher training). Joensuun korkeakoulun kasvatustieteiden osaston selosteita ja tiedotteita 44. In Finnish.

Perho, H. 1983b. Motivational and career choice uncertainty of university students'. In M. Pöyhönen (Ed.) Finnish-Soviet symposium on psychology of work and occupations. Symposium material. Finnish-Soviet Committee on Scientific-Technological Co-operation, 266-279. Helsinki.

Perho, H. 1984. Ammattisuuntautuminen ja opettaja-ammatin valinta. Neljän vuoden seurantatutkimus humanistisen ja luonnontieteellisen alan opinnoissa. (Vocational orientation and choice of the teaching profession: a four-year follow up study in the humanities and sciences). University of Joensuu. Faculty of Social Sciences. Psychological reports 3. English summary.

Ruohotie, P. 1980. Opettajien työmotivaatio. (Teachers' work motivation). Tampereen yliopisto. Kasvatustieteen laitos. Julkaisusarja A 17. In Finnish.

Seppä, E.-L. 1981. Korkeakouluopintoihin hakeutuvien uranvalinnan perusteet, ammatilliset intressit sekä persoonallisuus- ja kykytekijät. (Career choice motives, vocational interests, personality and abilities of university applicants). Joensuun korkeakoulu. Psykologian laudatur-tutkielma. In Finnish.

Mauri Panhelainen

STUDENTS' MOTIVATIONAL BACKGROUND AND THEIR ORIENTATION DEVELOPMENT DURING STUDY YEARS

ABSTRACT

This article is concerned with students' initial motivational situation as realized in terms of ideal or practical preferences at time of selection, and with connections between this point of departure and development of orientation in the course of their study careers. The study and professional orientation of students in the humanities and natural sciences (N=298) was analysed prior to commencement of studies and in their second and fourth years.

Of considerable significance for the later study career appeared to be whether the student embarked upon his studies in the field he preferred. In many cases a negative situation in this sense implied a drifting trend in orientation. Early commitment, on the other hand, and particularly the decision to train as a subject teacher, meant permanent study and professional orientation. In the Finnish context there is among students of the humanities and natural sciences an unmistakable connection between father's training and the development of professional orientation during studies, no such connection was observed with background factors such as sex and school success at sixth form level. The research results here would suggest that the new higher educational system adopted in Finland in recent years serves to structure students' study career and exerts a more marked influence on their professional development than the earlier system.

1. Introduction

In many European countries during recent decades reforms have been implemented of university studies and their structure, this entailing among other things a reviewing of the relationship between university training and professional activity. Conceptions of the optimal relationship between higher education and practice diverge in many cases considerably (see e.g. Teichler

1983, Dent 1983). While researchers have been interested in the university as an agent of socialization, and processes of development in students during their university years have also to some extent been analysed, little attention has been directed in reforms and their evaluations to development in students' study and professional orientation.

No more interest has been shown in Finland than elsewhere in the effects the recently adopted degree system has had upon these developmental aspects. The reform brought the most marked changes in the structure of training in the humanities and the natural sciences, this including the training of subject teachers. The altered structure of courses channels the study process in a different manner from the previous system. It also requires of the student an altered developmental profile in professional orientation. Most typically this is manifested in the training of subject teachers, where the point of departure was the integration of studies in the subjects to be taught and in education respectively. This objective has led in practice to the arrangement of studies intended as qualification for the teaching profession parallel with the subject syllabus.

The present article analyses development in study and professional orientation among students in the humanities and natural sciences from the point of seeking admission to university to the fourth year of study. The cohort involved in this investigation comprised students of the first intake working under the reformed degree system, so that it is a question of an evaluation of the effects of that system. Apart from throwing light on changes in orientation and factors underlying them, analysis of orientational development gives also a more general picture of the influence the structuring the training courses exerts upon studies and study career.

Many researchers have recognized the significance of the realization of students' objectives and preferences in respect of field of studies at the point of selection (Järvinen 1970,

Anderson & Western 1972, Kohli 1973, Häyrynen & Perho 1978, Panhelainen & Malin 1983). As to the connection between the initial situation and students' subsequent study and professional orientation, very little empirical information is available. In the wider context, the study of changes in attitudes to study and vocation falls within the field of research into university studies as a process of socialization.

In the present article this process is studied in the light of students' orientational development. Orientation comprises attitudes to both studies and profession. Study orientation is analysed in terms of commitment to study field. The development of professional orientation, again, is assessed in the light of changes in professions objective. Analysis of the problem in hand is based on the picture gained of study and professional orientation at three points of assessment. The two orientational components, study and professional attitudes, are regarded as being in principle elements in one and the same process of development, as in Härnqvist (1978), Sjöstrand (1980) and Perho (1982).

2. Problem and research material

The problem approached here is the connection between students' initial motivation and changes in study and professional orientation in the course of university studies. Indicators for this initial situation were the realization or non-realization at selection of students' preferences regarding field of studies.

The material comprosed students completing their fourth year of studies in the Faculties of Humanities in the Universities of Tampere and Turku and the Natural Science Faculties in Turku and Oulu. Data were collected by means of questionnaire mailed (or given in conjunction with the admission process) at three time-

points: on seeking admission (1980), in the autumn term of the second study year (1981) and the autumn of the fourth year (1983). Response varied between 77 and 80 %.

Of those commencing their studies in the faculties involved a very considerable proportion had by their fourth year transferred to other studies or discontinued study. In the Humanities the figure was 30 % and in the Natural Sciences 43 %. Since at student selection not all planned vacancies were filled, the proportion of empty places by the fourth year was in the Humanities over 40 % and in the Natural Sciences about half. The cohort involved in the present study is thus to a very high degree select.

3. Method

The realization of ideal and practical preferences in student selection was analysed by means of ordinary cross-tabulation, a measure of commitment to study field being formed for later analyses, together with orientation types classed according to changes in professional orientation. Connections between initial situation and orientational development were analysed using log-linear models (Payne 1977, Andersen 1980, Malin 1983). This procedure was chosen for two reasons. In first place the material consists mainly of empririal data based on discrete nominal and ordinal scale variables. Secondly, it involves a longitudinal research problem typical from the standpoint of statistical analysis, in which the number of cases falls, by reason of loss (albeit always small) of panel measurements, rather low. Without danger to the reliability of results the method of log-linear models can be fitted to a multidimensional contingency table with very small cell frequencies, even zeroes.

The general form of the log-linear model in the case of three variables is

$$\ln F = GM + A + B + C + A.C + A.B + A.B.C$$

where F is the frequency, GM the overall effect parameter, A.B, A.C and B.C the interaction effect parameters of two factors and A.B.C those of three. From this saturated model, whose parameters reflect relationships between the variables, it was sought to remove parameters irrelevant to the empirical material, that is, any which turned out in the model to have zero value.

4. Formation of preference groups and types of orientation

4.1. Realization of ideal and practical preferences at selection

Students' initial motivational situation was assessed on the basis of realization of preferences regarding field of study. By this is meant that the student gained admission to the training field he had placed first in order of preference at application. Realization of ideal preference implies that the student commenced studies in the field which was his ultimate objective (ideal field). Many applicants, however, did not seek admission to the field they had placed first in their ideal rating but, on the basis of expected actual achievement adopted as a realistic goal study in some other training field. This practical objective is reflected in the practical preference, which differed from the ideal in some third of cases. Preference groups were formed in the following manner:

Reference group	Ideal preference	Real preference	Field of training adopted
	Training field	Training field	Training field
I	A	A	A
II	A	B	B
III	A	A	B
IV	A	B	C
V	A	B	A

The motivational situation of Group I (AAA) was the most favourable as assessed on this basis, their ideal and practical preferences and actual field embarked upon coinciding. (The analysis was carried out by training fields, i.e. humanities, natural sciences, medicine etc.). Group II at selection realized their practical preference on the assumption that the ideal would prove an unrealistic goal. The initial motivation of those belonging to this group may nevertheless be considered reasonably good. For groups III (AAB) and IV (ABC) the situation at the outset was presumably less inspiring in that there neither ideal nor practical preferences were realized on application for places.

In a sense the most peculiar group was V (ABA), its members setting as their realistic objective a field other than their ideal, applying nonetheless for admission to the latter and - contrary to their expectation - gaining a place there. For them the initial moticational situation was of course favourable. The proportion of this group in the whole material was however small, as the following tabulation of the relative proportions of the preference groups among students in the humanities and natural sciences brings out.

TABLE 1. Realization of fourth-year students' preferences at student selection in 1980

Preference group	Training field: humanities	natural sciences	All
AAA	45.1	42.1	43.6
ABB	32.7	15.2	24.2
AAB	15.7	28.3	21.8
ABC	3.9	6.8	5.4
ABA	2.6	7.6	5.0
Total	100.0 %	100.0 %	100.0 %
(N)	(153)	(145)	(298)

Among both humanities students and natural scientists almost every other student realized at selection the ideal preference (AAA+ABA). Realization of practical preference was naturally on a higher level. If the groups AAA, ABB and (as is logical) ABA are included, it is found that of students in the humanities 80 % and of natural scientists 65 % set out on their study careers from a fairly favourable motivational situation. The motivational backgroung of the humanities students was thus better than that of the natural science students.

4.2. Dimensions of students' orientational development

The orientational development of students from outset of studies to their fourth year was analysed in terms of two components. Study orientation was followed as manifested in commitment to field of studies, this being operationalized in a variable of transfer of field. The operational indicator for change in professional orientation was the naming of professional objective at different time-points during studies. Commitment to field of studies and change in professional orientation reflect

different aspects of orientation and at the same time afford information on the relation between study and professional orientation as indicators of development of orientation.

The situation in respect of professional orientation at the various points of time is outlined in table 2.

TABLE 2. Professional orientation of students in their fourth year of studies in the faculties in question, assessed at three stages of study

Professional objective in undertaking studies	Time-point application 1980	second study year 1981	fourth study year 1983
No profession named	50.1	33.3	25.4
Teaching	20.5	43.1	47.5
Other than teaching	19.4	23.6	27.1
Total	100.0	100.0	100.0
(N)	(283)	(276)	(276)

The main trend of development in professional orientation is from uncertainty towards the subject teacher's profession. The most marked change occurred during the first year of studies, when choice of subject teaching becomes a matter of urgency by reason of the mode of selection for teacher training. Data on humanities students and natural scientists separately reveal the trend to be the same in both, only earlier in the case of the humanities. Here the change falls predominantly in the first year of studies as against the second in the case of the natural

science students.

The development of professional orientation is multidimensional, as change took place in all orientation groups in the first phase in many directions. Interest in the teaching profession is however clearly most stable of the orientational streams. 72 % of those who at intake gave teaching as their objective naming the same professional goal in their second and their fourth years. The corresponding figure for persistence in objective in the group naming professions other than teaching was only 28 %. A fifth of the entire cohort were uncertain of their future vocations at all points of time.

A cross-tabulation of the data from all three time-points gives a set of types of professional orientation.

Orientation type	Professional orientation at different points in time			Frequency of group	
	1980	1981	1983		
PO I	teacher	→ teacher	→ teacher	36	
PO II	uncertain	→ teacher	→ teacher	43	54
	other than teacher	→ teacher	→ teacher	11	
PO III	uncertain	→ uncertain	→ teacher	11	
	other than teacher	→ uncertain	→ teacher	2	
	uncertain	→ other than teacher	→ teacher	6	32
	other than teacher	→ other than teacher	→ teacher	6	
	teacher	→ uncertain	→ teacher	3	
	teacher	→ other than teacher	→ teacher	1	
PO IV	other than teacher	→ other than teacher	→ other than teacher	14	31
	uncertain	→ other than techer	→ other than teacher	17	
PO V	uncertain	→ uncertain	→ uncertain	30	
PO VI	(combinations other than the above)			66[1]	
			Total	249	

1) The other combinations in this group are small in frequency (varying between 1 and 7 cases), with the exception of the process uncertain - uncertain - other than teacher (N=22). This group was not readily combined with type PO IV in that PO IV stand out in itself as a group oriented to professions other than teaching early in study career

The most homogeneous of the orientational types were PO I and PO V (PO = professional orientation), with PO II and PO IV also fairly homogeneous.

Data on transfer to other studies, descriptive of the commitment component in orientational development, are available from four time-points, 1981, 1982, 1983 entrance examinations and the application phase. This latter item is based on present field of study or, in addition to it, application for admission to some other field in 1980. Classification of the study commitment variable is thus based on the time dimension, where the value for the variable is determined by the point in time at which the student relinquished attempts to gain entry elsewhere. Under this mode of classification the material shows the following distribution:

Time-point of commitment	N	%
1. prior to commencement of studies	100	37.9
2. during first study year	86	32.6
3. during second study year	40	15.1
4. during third study year	18	6.8
5. not committed by fourth study year	20	7.6
	264	100.0

Connected to the time dimension the commitment variable appears to work well in that the classes belonging to it involve very few cases in which application and non-application elsewhere alternated. For the purpose of analysis the variable was formed into groups of early commitment (classes 1 and 2 combined) and late commitment (classes 3-5).

5. Connection of initial situation to orientational development

5.1. Hypotheses

As basis to the analysis a number of hypotheses were formed, being more detailed formulations of the research problem. Also for research-technical reasons these hypotheses are necessary, for the use of log-linear models requires a preconception of the problem.

The formation of the specific hypotheses was regulated by two general points of departure. In first place it was assumed that professional orientation and commitment to study field function in certain respects mutually as different indicators of orientational development. Secondly it was assumed that ideal preferences and practical preferences would show in some respects divergent connection with this development.

Hypotheses:

(1) There is a positive dependency between a favourable initial motivational situation and a stable course of development in professional orientation.

Grounds: Failure to realize preferences presumably means from the student's standpoint re-adjustment of plans and objectives to a new situation, this being reflected also in changed professional orientation. Conversely a favourable outset will promote stable development of professional resolution.

(2) There is a positive dependency between favourable initial motivation and early commitment to study field when the ideal preference is realized at selection.

Grounds: Successful application for the desired field of studies (realization of ideal preference) will promote early commitment to the field, whereas the

connection between realization of practical preference and time-point of commitment is not so firm. Presumably at least a part of those who realized their practical preferences will during their study years seek access elsewhere, seek, that is, to realize their ideals.

(3) The effect of background factors is assumed to be such that male students, those with good school results, those from the cities and setting out from the most favourable home-educational level are better able than others to realize their preferences at student selection, are professionally better aware of their goals (steady development of professional orientation), but are later in committing themselves to a field of study when their initial preferences are not realized at selection.

Grounds: The hypotheses regarding background factors are based on theory of aspiration and earlier research results pertinent to it, whereby sex, school success and socio-economic and regional origins influence study career.

5.3. Results

5.3.1. Connection between initial study situation and development of professional orientation

The results obtained lend support to the first of the main hypotheses, but only in part. Explicitly, resolved orientation to the teaching profession (orientation type PO I) stands in marked relationship to realization of preferences at selection. Ideal and practical preferences are however in different positions in this: the connection is manifest when ideal preferences are realized, but weaker when the dichotomized assessment of the initial motivational situation (favourable versus unfavourable) is based on practical preferences. The connection between the

main variables is not clearly seen in the group fairly firmly oriented to professions other than teaching.

Of the background variables, sex, regional background or school success were not found related to realization of preferences, professional orientation or the relationships between these. The educational background in the student's home, on the other hand, was seen to have a significant effect on orientation type.

In this analysis, as in other analyses of the research results set out later, a symmetrical log-linear model based on three-dimensional tabulation was used, which describes associations between the variables. The chief item in the analysis was the dependency between realization of preferences and orientation. Analysis was also made of the relationship between these and the background variables taken alternately as third component in the model, that is, sex, regional background and school success.

The mode of use of the log-linear model may be seen in the following example. Analysis of the observational material in Table 3 produces an acceptable log-linear model, which takes the form

$$\ln F = GM + A + B + C + A.B. + B.C$$

Thus the interaction effect of the three factors involved and that of factors A and C is zero, but associations are to be seen between factors A and C and B and C. The finding means that a connection prevails between realization of ideal preference (favourable initial motivation) and development of professional development (interaction effect parameter A.B), and similarly between family training background and type of orientation (interaction effect parameter B.C).

The associations brought out by the accepted model were further specified by comparing the cell frequencies of the corresponding

TABLE 3. Contingency table showing connections between realization of ideal preference, professional orientation type and family training background

A. Preference groups: realization of ideal preference at selection	B. Type of professional orientation[1]													
	T-T-T		U-T-T O-T-T		<>-O-T <>-U-T		O-O-O U-O-O		U-U-U		Other		All	
	C.Father's training[2]		C.Father's training		C.Father's training		C.Father's training		C.Father's training		C.Father's training		C.Father's training	
	L	H	L	H	L	H	L	H	L	H	L	H	L	H
Ideal preference realized	14	12	12	10	7	4	5	9	13	1	21	9	72	46
Ideal preference not realized	1	4	21	8	11	8	11	6	13	2	26	7	83	34
Total	15	16	33	18	18	12	16	15	26	3	47	16	155	80

1) Formation of preference types is described on page 102. The types are set out in this tabulation in corresponding order, useing the designations T=teacher, O=other than teacher, and U=uncertain of profession. The symbol signifies that oreintation may be any one of these three.

2) Family training background is dichotomized according to father's training: L=lower than average
H=higher than average

107.

section of the contingency table with theoretical expectation values under a hypothesis of non-dependency. The results confirms the observation made earlier that a marked relationship obtains between realization of ideal preferences and expressly firm orientation to the teaching profession. No associations were found in the case of other orientation types. In examining background factors it was observed that those evincing prolonged uncertainty regarding profession were more than ordinarily of lower social background.

5.3.2. Initial study situation and commitment to study field

The commitment variable reflecting the other component of orientation, study orientation, stands in relation to a positive initial study situation when either ideal or practical preferences are realized: gaining access to their preferred field of study students commit themselves earlier than average to that field. Ideal and practical preferences would appear to be of somewhat differing significance with regard to development of professional orientation and commitment. Ideal preferences have a stronger association than practical preferences with later development of professional orientation, whereas such a difference does not emerge when orientational development is described in terms of commitment to study field.

Of the background variables, sex, family training background and student's school record are not associated with time-point of commitment or with the dependency between initial situation commitment. It was, on the other hand, observed that those from city residences gained admission slightly more often than those from rural areas to the study field they wished.

6. Summary and discussion

The research findings here support the conception that the initial motivational situation from which the student embarks upon his studies is of significance for his eventual study career. In keeping with the central hypotheses it was observed that in the humanities and the natural sciences a favourable initial situation is positively associated with stability of professional orientation in the case of a student intending to take up teaching. This association is marked especially where the ideal preference finds outlet, that is, when the student was able to commence his studies in the field which was his ultimate objective. Early commitment to study field stood likewise in positive relation to realization of preference at time of selection.

The initial study situation did not appear to distinguish clearly the various orientation types with the exception of those intending to teach. The profession of subject teacher would indeed appear to occupy a position of career anchor in the orientational development of humanities students and natural sciences. Observations regarding the influence of background and manner. The connection between family training background and professional resolve versus uncertainty (regardless of realization of preference) suggests that the processes of professional development are susceptible to the influence of social determinants, at least among students of the humanities and the natural sciences, and possibly on a wider scale.

Contrary to the hypotheses neither sex nor school success would appear to be of significance from the standpoint of the problem in hand. They might on the other hand be assumed to have some connection with study success at university; this, however, was not within the present scope of inquiry. If the hypothesis

holds, an interesting model might be envisaged, one namely in which the much investigated academic ability factor would be independent of the other significant aspect of study career, orientational development.

The findings confirm the conception that study orientation and professional orientation are in a general sense components of one and the same process of development. It was on the other hand observed that the dependency of these two components on background factors was different, and likewise in certain respects the relationship with the student's initial situation as measured in terms of realization of ideal and practical preferences. Precisely success in gaining access to the field of ultimate preference (realization of ideal preference) would seem to be of particular significance for the process of development of professional resolve in the course of studies. Commitment to study field does not, it would appear, necessarily presuppose very marked identification with a specific profession, since realization of practical preference at selection "sufficed" as condition for early commitment to study field.

Ideal and practical preferences have according to the findings different positions with regard to change in professional orientation, not, on the other hand, to time-point of commitment. The division of preferences into ideal and practical appears to apply reasonably well in empirical analysis of the orientational development of university students.

The practical implications of these results would indicate that the altered structure of the degree system is of significance for students' development process. Under the new system the dual selection for subject teacher training determines students' professional maturation in a manner different from the former system. The participation of trainee teachers in education studies and particularly teaching practice parallel with their subject syllabus serves to socialize them also in respect of the professional values of the teacher's work.

BEST COPY AVAILABLE

The research finding also indicate that the study process in the humanities and the natural sciences varies from student to student. In addition to the institutional influences the way students seek from the outset and from various motivational starting-points to reconcile on the one hand professional objectives and on the other the many goals involved in university studies and the new life situation groups them in types varying widely in study career and orientational development.

REFERENCES

Andersen, E.B. 1980. Discrete statistical models with social science applications. Amsterdam: North Holland Publishing Co.

Anderson, D.S. 1974. The development of student-teachers. A comparative study of professional socialization. Paris: OECD.

Anderson, D. S. & Western, J. S. 1972. Professional socialization. In F. J. Hunt (ed.) Socialisation in Australia. Sydney: Angus and Robertson, 288-307.

Dent, P. 1983. By the year 2000: Back to strong traditionalism for American higher education. In W. Rieck (ed.) Higher education by the year 2000. How can our institutions of higher education contribute to coping with societal problems? EARHE Congress 1983. Congress preparatory papers, vol. II, 198-207.

Härnqvist, K. 1978. Individual demand for education. Analytical report. Paris: OECD.

Häyrynen, Y-P. & Perho, H. 1978. A motivational dilemma of higher education - on the importance of the motivational development and the solidity of vocational choice to student learning and university pedagogics. Paper presented in the 4th International Conference of Higher Education. Lancaster 29th August - 1st September, 1978.

BEST COPY AVAILABLE

Järvinen, A. 1970. Korkeakouluopiskelijoiden keskeyttämishalukkuus (Potential drop-out among university students.) Tampereen yliopiston tutkimuslaitos. Tutkimuksia A 36. English summary.

Kohli, M. 1973. Studium und berufliche Laufbahn. Über den Zusammenhang von Berufswahl und beruflicher Sozialisation. Stuttgart: Enke.

Malin, A. 1983. Log-lineaariset mallit ja menetelmän sovellus korkeakouluopintoihin hakeutumiseen. (Log-linear models and an application of the method to study of application into higher education). Suomen kasvatustieteellinen aikakauskirja Kasvatus 14 (3), 226-235. English summary.

Panhelainen, M. & Malin, A. 1983. Opiskelijoiden valikoituminen humanistisiin ja luonnontieteellisiin korkeakouluopintoihin ja ensimmäinen opintovuosi. (Selection of students in the humanities and natural sciences and their first study year in higher education). University of Jyväskylä. Institute for Educational Research. Bulletin 346. English summary.

Payne, C. 1977. The log-linear model for contincency tables. In C. P. O'Muircheartaight & C.Payne (ed.) The analysis of survey data. Volume 2. Model fitting. New York: John Wiley & Sons, 105-144.

Perho, H. 1982. Ammatti- ja opintosuuntautumisen luonne ja merkitys luokanopettajaopinnoissa. (Nature and significance of professional and study orientation in the education of primary teachers). Publications of the University of Joensuu A 23. English summary.

Sjöstrand, P. 1980. Teorier om yrkesval. (Theories of vocational choice). In S. Franke-Wikberg & U. P. Lundgren (ed.) Karriär och levnadsbana. En antologi om studie- och yrkesval. Stockholm: Wahlström & Widstrand, 24-59. In Swedish.

Teichler, U. 1983. Perspectives of university graduations: The universities' view. In W. Rieck (ed.) Higher education by the year 2000. How can our institutions of higher education contribute to coping with societal problems? EARHE Congress 1983. Congress preparatory papers, vol. II, 198-207.

BEST COPY AVAILABLE

Raimo Mäkinen & Antero Malin

EFFECTS OF A DEGREE REFORM ON DROP-OUT AND DURATION OF STUDIES AT THE UNIVERSITY OF JYVÄSKYLÄ

ABSTRACT

The article comprises an account of the background and general principles behind a university degree reform introduced in Finland in the late 1970s, together with an empirical study of the effects of this reform on students drop-out and duration of studies in the Faculty of Social Sciences in the University of Jyväskylä, where the new system was adapted in the autumn of 1975.

The proportion of students discontinuing studies without taking any degree remained approximately the same - some 20 % - among those commencing under the reformed system in 1975-1977 as among those entering the old in 1972-1974. As regards the numbers taking a higher first degree and the time taken in its completion, the distribution has clearly altered. Of those commencing 1972-1974 50 % reached this level in 9 years, while the time required among those entering the university 1975-1977 was 6.5 years. The change may be explained in the light of two factors: (1) the proportion of those delaying completion of studies diminished, and (2) under the new system the higher degree level is also reached by the majority of those who under the old would have discontinued their studies at the lower first degree level.

In the Faculties of Humanities and Mathematics and Natural Sciences in the same university, where the reform did not take effect until after the close of the study period, the development was part the opposite. Here drop-out or discontinuation of studies at the lower first degree increased and completion of the higher first degree diminished and/or slowed down.

1. Introduction

Finland's transition to "mass higher education" and certain problems this has involved are reflected in Table 1 below. The growing intakes are manifested within a few years in markedly increased numbers engaged in study. Although the number of degrees completed has more or less kept pace with the numbers admitted to the universities, the degree figures are totals combining lower and higher first degrees (approximate equivalents of the B.A. and M.A.), so that the number of individual students taking degrees has continuously fallen below the intake figures. Underlying this is delayed completion and drop-out, which by reason of the very numbers involved come to represent an ever more significant phenomenon in society.

TABLE 1. New and total students and first degrees taken at Finnish universities in the academic years 1950/51-1982/83

Academic Year	New students		All students		First degrees Passed
	N	% of all 19 y olds	N	% of 15-24 y olds	N
1950/51	2,949	4.6	13,851	2.2	2,056
1955/56	3,824	6.0	16,181	2.6	2,215
1960/61	5,770	8.4	24,122	3.5	3,201
1965/66	10,044	11.7	41,205	4.8	5,216
1970/71	9,730	11.2	57,851	6.7	7,954
1975/76	12,915	15.9	75,442	9.3	10,229
1980/81	11,721	15.4	82,060	10.8	9,855
1982/83	12,152	(16)	85,379	(11.5)	8,907

Source: Official Statistics of Finland XXXVII:12.

In the initial stages of expansion development was determined mainly by the need to satisfy a manifest demand for training, whose impact was to a considerable extent absorbed by provision of less expensive and more easily created student vacancies, that is, in the Humanities and the Social Sciences (cf. Elovainio 1974, Vuorinen 1975). In Finland as elsewhere, however, the growth of the higher educational sector tended in itself to bring into focus the questions of the social productivity of the investments made in it and the wastage involved in delayed completion of studies and drop-out (cf. Miller 1970).

As a reaction to the situation a special law on university development was enacted in 1966, and in pursuance of a subsequent Cabinet decision a reform was undertaken of degrees in the Humanities and Mathematical and Natural Sciences and the Social Sciences (Anon. 1972). Both of these measures may be seen as attempts to correct the distortions arising from expansion under pressure of demand by more deliberate coordination of the amount and the content of training with the needs of society, particularly of work life and production (Elovainio 1974).

The prime objective of the development legislation was to regulate the numbers of vacancies in the various study sectors and to correct biases in student/teacher rations. The original purpose of the degree reform, again, was to shape the training system, now attaining the proportions of mass production but developing in isolation on from labour market conditions, into programmes more pronouncedly vocational in orientation and more consciously planned. Apart from the appeal to vocational requirements the reform was felt to be justified in its promise of shorter duration of studies and reduction in drop-out - this having in fact been explicitly advocated in the 1966 decision. In the last analysis it was a question of effecting qualitative changes in higher education as appropriate to the mass proportions it had attained (cf. Trow 1974).

The emergence of the vocational aspect to such a prominent

position in the planning of the reform as a means (also) of countering delays and interruptions in studies may at least in retrospect be linked to the knowledge that study problems are explicable - in as far as they can at all be explained - primarily as problems of motivation and objective. Differences in study progress both from one individual to another and from one discipline to another are most consistently related to the degree of purposiveness of the studies involved - regardless of whether this in turn is explained on some individual basis or from external factors, for example such as have a bearing on the students in an entire field (Heinonen 1975, Hienonen 1970, Häyrynen 1970, Järvinen 1970, Marin 1970, parjanen 1968, 1979). For practice the conclusion to be drawn from this is that study progress can be encouraged by offering opportunities of studies leading to a more or less predictable and realistic prospect of an integrated professional career and life, and by arranging the content and the teaching technigues of courses in such a way that this prospect is clearly related to immediate study tasks. This viewpoint is especially significant where it is a question of the training of large numbers which (say for cost reasons) cannot be left for the individual to seek and find.

The committee set up to prepare the reform of philosophical and social scientific degrees in 1969 ultimately recommended the reestablishment of degrees in all fields on the basis of an analysis of educational policy objectives and of the connections between work life, research and university teaching. The general model proposed was the formation of study programmes corresponding to broad areas of vocational activity. In the case of the philosophical and the social sciences this meant a stress on their "vocationalization", but for many other fields (e.g. business, medicine and engineering) it was rather a question of more intensively scientific loading, of extension and hence prolongation of courses (Anon. 1972, cf. Konttinen, Nuutinen & Panhelainen 1984). Reforms along the envisaged lines have beenn instituted since the late 1970s and - something of paradox - last of all in the philosophic and social-scientific fields which were

the original point of departure.

Implementation of the reform in the Faculty of Social Sciences in Jyväskylä commenced on an experimental basis in the autumn of 1975. New students were admitted to seven more or less vocationally programmed courses of study leading directly to a higher first degree. At the same time those who commenced their studies under the old system continued with their courses composed and examined on patterns dictated by the discipline in question and leading to a lower and thereafter to a higher first degree.

2. The empirical problem and material

The purpose in what follows is to assess the effects of this reform on the progress of studies in the Faculty of Social Sciences in the University of Jyväkyä, taking account both the drop-out rate and completion of studies with the time required for this, that is, various modes of removal of students from the Faculty register.

Since corresponding reforms were implemented in the Faculties of Humanities and Mathematical and Natural Sciences in the same university some years later, any changes possibly taking place in study progress among their students may be used as some kind of point of comparison whereby general effects not connected with the reforms may be checked for.

The material for the study comprised university register data on the study progress of those who commenced in these three faculties in 1972-74 and 1975-77, that is, three intakes for the years preceding the reform in the Faculty of Social Sciences and succeeding it. The analysis involves those admitted to the faculties in question in the years 1972-1977 as follows (table 29):

TABLE 2. Number of students enrolled in 1972-1977 in the Faculties of Humanities, Social Sciences and Natural Sciences in the University of Jyväskylä

Year of enrolment	Faculty			
	Humanities	Social Sc	Math & Natural	Total
1972	325	199	169	693
1973	331	197	212	740
1974	334	245	245	824
1972-1974	990	641	626	2257
1975	326	214	230	770
1976	340	195	205	740
1977	313	178	216	707
1975-1977	979	587	651	2217
Total	1969	1228	1277	4474

The period followed extended to the end of the spring term 1984, entailing a maximum study time for those entering the University in 1972-1974 of 12 years, for some, however, only 11 or 10 years. The corresponding study time for those admitted 1975-1977 was between 9 and 7 years. Criterion for drop-out and interruption of studies at lower degree level was at least one year's absence from the register by the spring of 1984, so that with regard to these forms of withdrawal the investigation covers one year less.

3. Results

In respect of the initial situation - i.e. those commencing studies 1972-1974 - it appears (solid lines in Figs. 1-3) that the Faculty of Social Sciences diverged from the rest both in smaller numbers of drop-outs and in larger proportion of those completing their degrees in shorter time and attaining the higher level. Discontinuation at the lower degree level, again, was more or less the same as in the other Faculties, a point of interest in itselt in that the lower first degree in the Social Sciences is not a guarantee of placement in work life to the same extent as is the case with the lower degree in the Humanities and Natural Sciences for teaching posts in the basic school. Discontinuation at lower degree level took place somewhat later in the Humanities than in the other disciplines.

A comparison of those commencing studies before and after autumn 1975 in the Faculty of Social Sciences (Fig. 1) shows that

(1) the numbers leaving the university without taking any degree remained approximately the same - some 20 % of intakes discontinues their studies by the end of their eighth year.

(2) Discontinuation at the lower first degree (22 % of those entering 1972-1974) was eliminated as envisaged in the degree reform. The fact that cases are still found among those commencing 1975-1977 is explained in that in actuality about one tenth of these students were admitted as exceptional cases under the old system.

(3) The proportion of those completing the higher first degree rose in keeping with the fall-off in those discontinuing at the lower level - at the 9-year point of study duration 13 percentage units, from 50 % to 63 %. Time taken in completion evened out and at the same time on an average diminished slightly as a result of a rise in the number of those completing their courses

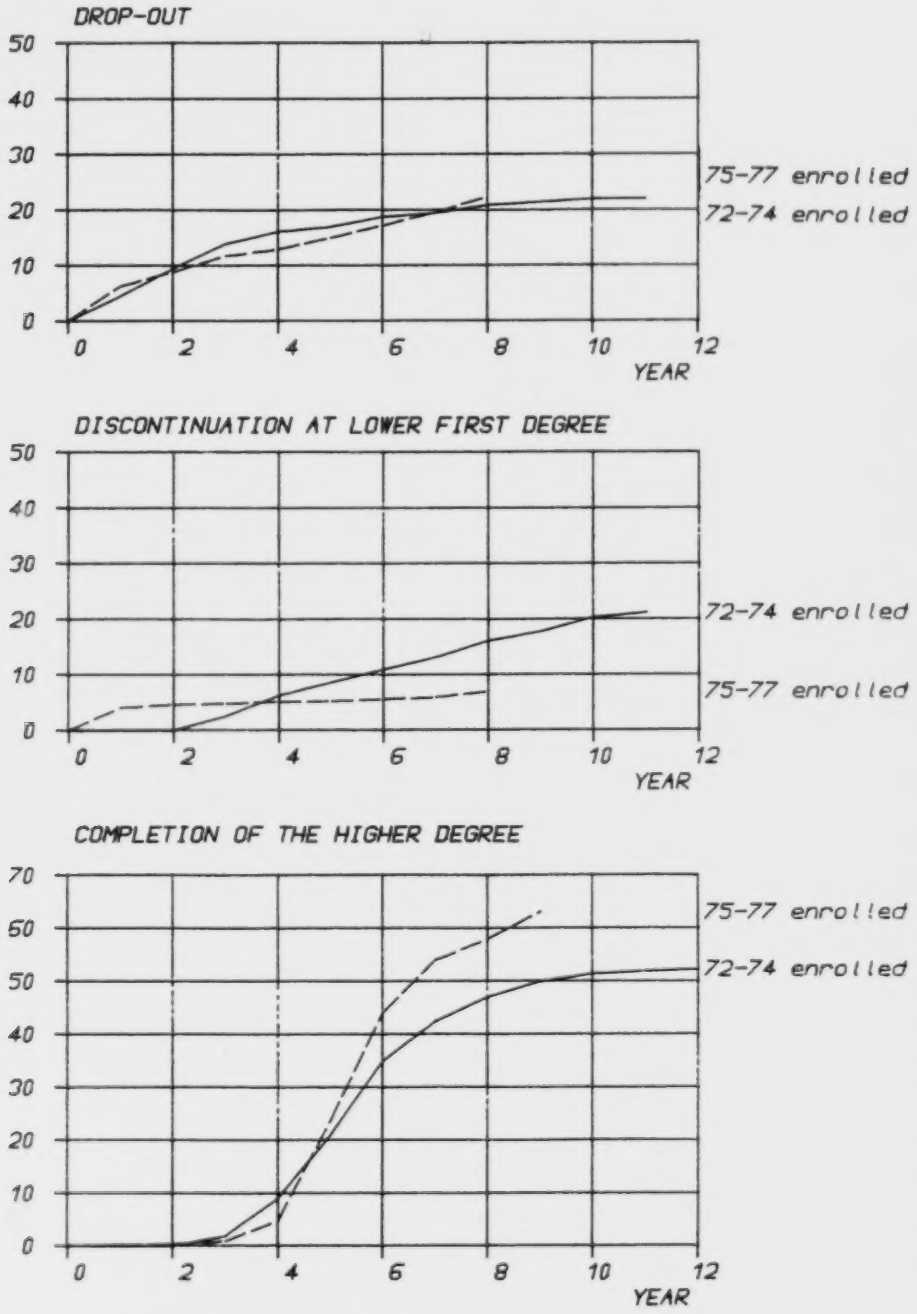


FIGURE 1. Cumulative proportions of intakes dropping out, discontinuing at lower first degree and completing the higher degree in the Faculty of Social Sciences

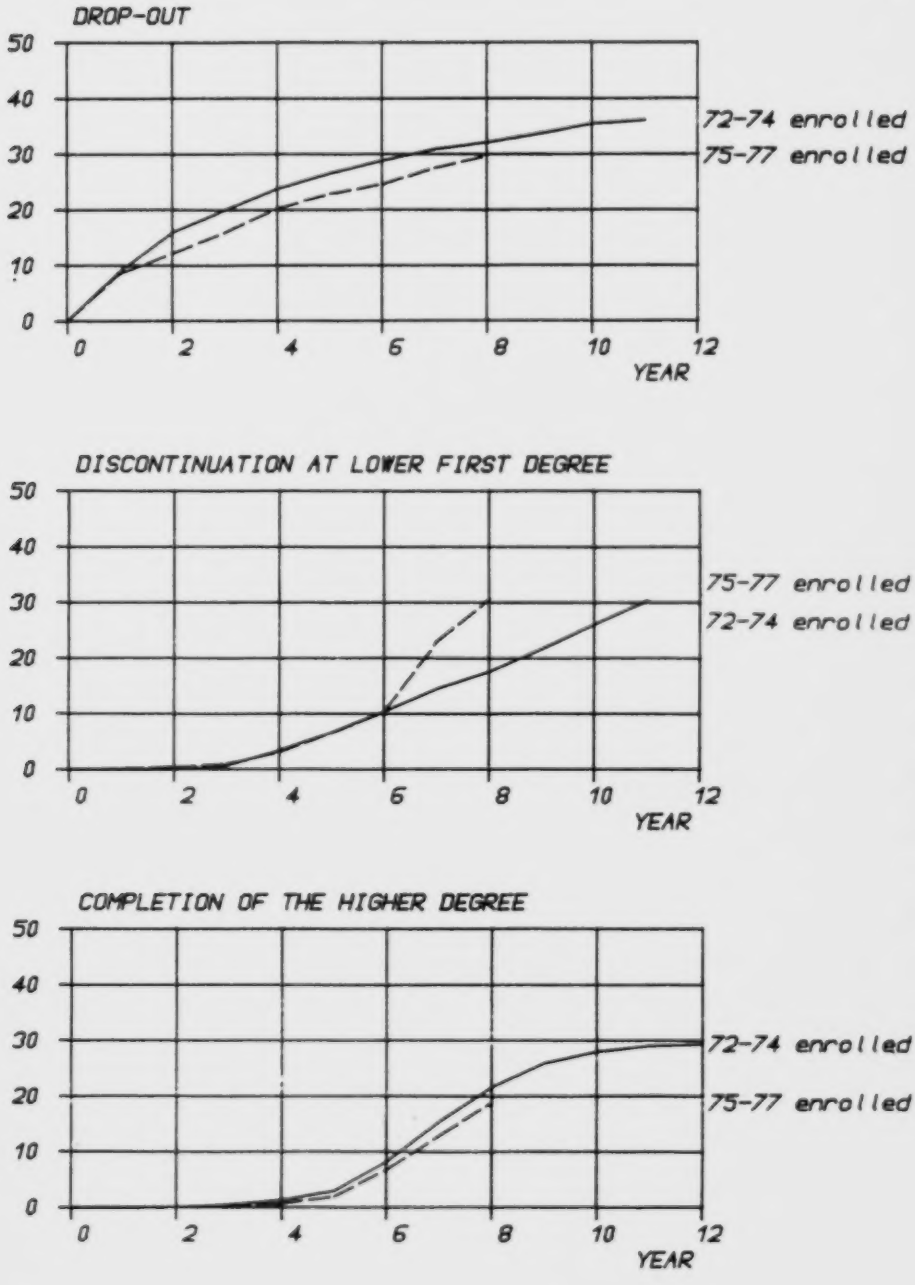


FIGURE 2. Cumulative proportions of intakes dropping out, discontinuing at lower first degree and completing the higher degree in the Faculty of Humanities

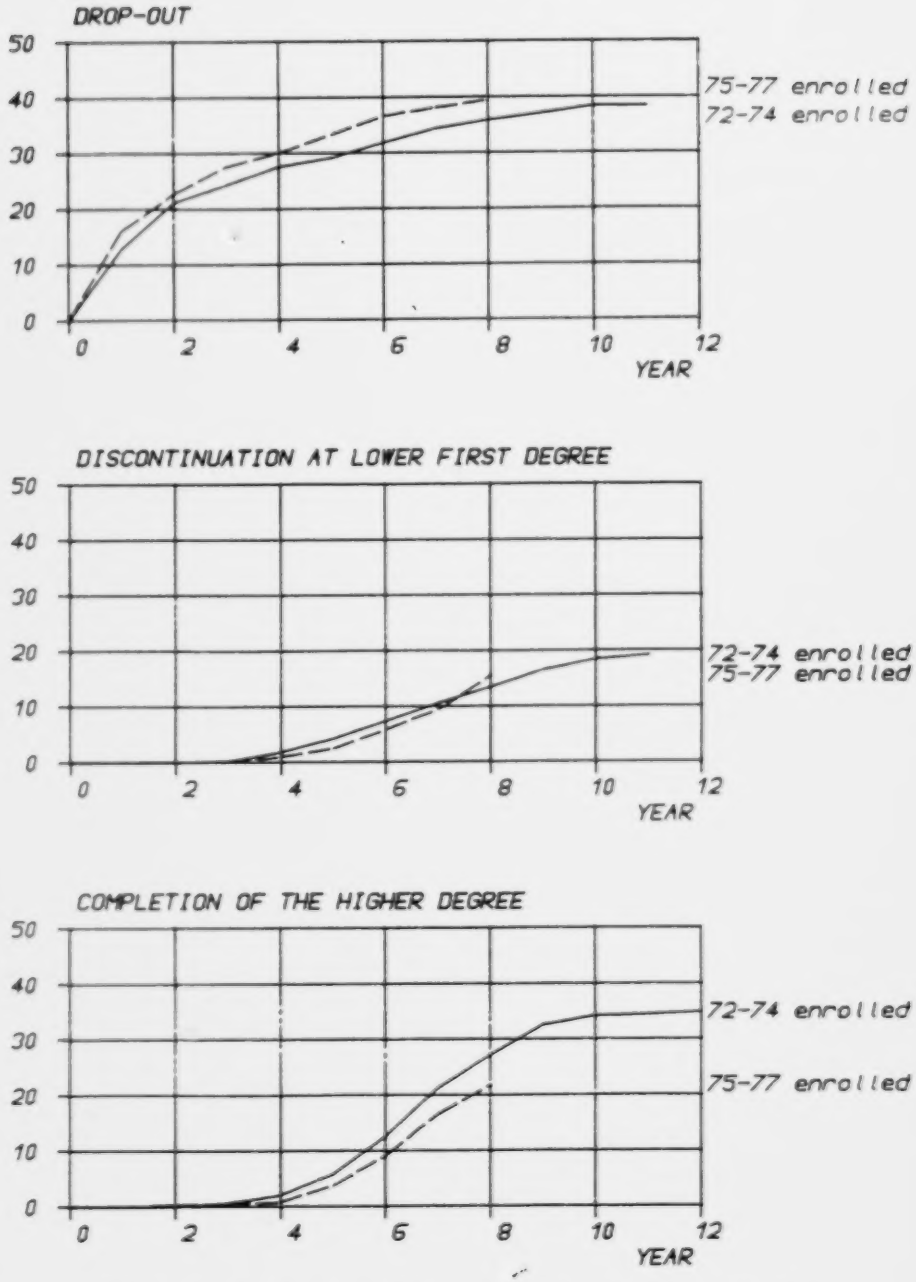


FIGURE 3. Cumulative proportions of intakes dropping out, discontinuing at lower first degree and completing the higher degree in the Faculty of Mathematical and Natural Sciences

in moderately short time, 5-8 years. Of those studying under the old system 50 % attained the higher degree by the end of their ninth year studies, while the same proportion of those commencing 1975-1977 reached this level in 6.5 years.

The development in the other Faculties during the same period is seen in Figs 2 and 3. The numbers dropping out in the Humanities (35 % of the 1972-1974 intakes) fell slightly but rose in the Natural Sciences (to 40 % as of the eighth year of study).

Discontinuation after completion of the lower first degree increased in the Humanities in a manner reflecting both actual drop-out and a reduced number of students continuing to the higher level. The chenge may be interpreted as a lowering of target and a transition to a more favourable mode of withdrawal: of those admitted 1975-1977 30 % discontinued upon completion of the lower degree by the end of their eighth year, whereas the same proportion was reached among the 1972-1974 intakes in 11 years. Discontinuation at the lower level would also appear to have increased somewhat in eight years of study in the Natural Sciences.

In the Faculty of Natural Sciences the rise in drop-out mainly follows the fall-off in completion of the higher degree and/or delayed completion. While 35 % of those commencing in 1972-1974 reached the higher first degree in 9-10 years, the corresponding figure for those entering 1975-1977 at the nine-year point was still under 30 %.

4. Discussion

In the Faculty which implemented the degree reform there were changes in study patterns which did not take place in the Faculties maintaining the old system. The altered situation is

reflected in the numbers attaining the higher first degree level and to some extent also in a reduction in study time; not however in a direct change in discontinuation without graduating. The partly contrary development in the comparison faculties serves to show that the change does not derive from any general factors affecting all students in the same university (for example the system of study grants, student culture or the like).

Although the improved pattern of study progress in the Faculty of Social Sciences in all probability results from the reformed degree system, it is not yet possible on the basis of these available data to conclude that the change may be attributed to any of the specific points set out at the beginning of this account. THe greater part of the outcome may be put down to the removal of the intermediate degree: the majority of students have continued to the higher first degree level (in itself unaltered in scope) since there has no longer been any sensible reason to break off sudies before it. (In itself this too calls for an explanation, and is by no means in conflict with the objectives and the original principles of the reform.)

A certain vocational orientation is suggested in the earlier account by Parantainen (1982), whereby studies progressed best in those new training programmes in which work placement prospects and/or vocational orientation was most clearly defined. Doubtless some influence must also be attributed to the fact that as a by-product of the degree reform (a kind of Hawthorne effect) teaching has been better organized. Further effects may be envisaged from the increased rigidity of the study courses training for professions, and particularly from the improved supervision of students' master thesis stages.

The results set out here are partly in harmony with the pessimistic view expressed by Tinto (1982) that the possibilities of a training unit to exert an influence on drop-out are negligible. Not even in the same unit, however, is the drop-out rate

constant. Here, for reasons which must remain open, the number of those discontinuing their studies at the level of the faculties compared fell off in the Social Sciences in fact some years prior to the degree reform (Malin & Mäkinen 1984). Since as a result of this development alone drop-out was low, the degree reform cannot well have exerted much further influence on it. One actual possibility left is to influence the progress of studies, and here the present results show something to have been achieved.

REFERENCES

Anon. 1972. Filosofisten ja yhteiskuntatieteellisten tutkintojen toimikunnan mietintö. Komiteanmietintö A:17. (Report of the Committee on Degree in Philosophy and Social Sciences. Committee report A:17.) Helsinki: Valtion painatuskeskus. In Finnish.

Anon. 1984. Higher education 1980-1984. Official statistics of Finland XXXVII:12. Helsinki: Central Statistical Office of Finland.

Elovainio, P. 1974. Korkeakoululaitoksen rakenne ja yhteiskunnan muutos. (The structure of the university and societal change. Sociology). Sosiologia 11 (5-6), 244-261. In Finnish.

Heinonen, M. 1975. Opintojen viivästyminen valtiotieteellisessä tiedekunnassa. (Delay in studies in the Faculty of Political Science.) Helsingin yliopiston opintoasiaintoimisto, tutkimuksia ja selvityksiä 4. In Finnish.

Hienonen, R-L. 1970. Opintojen keskeytyminen. (Drop-out.) Helsinki: Suomen ylioppilaskuntien liitto. Korkeakoulupoliittinen monistesarja 12. In Finnish.

Häyrynen, Y-P. 1970. Yliopiston ilmastot. (University climates.) University of Helsinki. Institute of Social Policy. Report 7. In Finnish.

Järvinen, A. 1970. Korkeakouluopiskelijoiden keskeyttämishalukkuus. (Drop-out rate among university students.) Tampereen yliopiston tutkimuslaitos, A-tutkimuksia 36. In Finnish.

Konttinen, R., Nuutinen, A. & Panhelainen, M. 1984. Korkeakoulutuksen ja työelämän välisten yhteyksien tutkimus pedagogisesta näkökulmasta. (Pedagogical aspects of research on higher education and work life.) University of Jyväskylä. Institute for Educational Research. Bulletin 248. English summary.

Malin, A. & Mäkinen, R. 1984. Opintojen kulku Jyväskylän yliopiston yhteiskuntatieteellisessä tiedekunnassa ennen ja jälkeen vuoden 1975 tutkinnonuudistuksen opinnot aloittaneilla. (Course of studies in the Faculty of Social Sciences at the University of Jyväskylä before and after the 1975 degree reform.) In L. Lestinen (ed.) Tieteellisen koulutuksen nykykohtia. (Current approaches in higher education in Finland.) University of Jyväskylä. Institute for Educational Research. Bulletin 260. English summary.

Marin, M. 1970. Tiedekunnat opintoympäristöinä. (Faculties as study environments.) Helsinki: Tammi. In Finnish.

Miller, G. W. 1970. Success, failure and wastage in higher education. London: Harrap.

Parantainen, J-P. 1982. Opiskelu yhteiskuntatieteellisen tiedekunnan koulutusohjelmissa ja valmistuneiden työhönsijoittuminen. (Studies included in the degree programme of the Faculty of Social Sciences and the employment of graduates.) Jyväskylän yliopisto. Opintotoimiston julkaisuja 5. In Finnish.

Parjanen, M. 1968. Koulutus ja ammattiura. (Education and professional career.) Unpublished licentiate thesis. University of Tampere. In Finnish.

Parjanen, M. 1979. Learning, earning and withdrawing. On social factors affecting higher educational and professional career. Acta Universitatis Tamperensis, Ser. A vol. 104.

Tinto, V. 1982. Limits of theory and practice in student attribution. Journal of Higher Education 53 (6), 687-700.

Trow, M. 1974. Problems in the transition from elite to mass higher education. In Policies for Higher Education. Paris: OECD, 9-36.

Vuorinen, J. 1975. Yhteiskuntatieteilijöiden työelämään siirtyminen. (The job-placement of social science degree holders in Finland). Foundation for Research in Higher Education and Science Policy. Research Report 10. English summary.

Wankowski, J. A. 1973. Temperament, motivation and academic achievement. Birmingham: University of Birmingham.

Anssi Hyvärinen

THE SCHOOL OF ECONOMICS AND THE FORMATION OF MANAGERIAL CAPABILITY

ABSTRACT

The article discusses the work placement of MBA graduates from the Helsinki School of Economics and the relationship between this aspect and the social background, sex and progress of studies of these students.

Special emphasis is laid on the role of the firm in the recruitment of personnel. Here social background, sex and vocational and study history involve factors which might be called management potential. Firms have developed a variety of procedures for screening this potential at recruitment.

The article stresses that while the School of Economics occupies an important position in the teaching of management skills, research in this field must extend its scope to embrace the social background of its students if a right understanding of the School's role in society is to be attained.

1. Introduction

The formation of managerial capability has traditionally been considered from two standpoints.

The first of these is concerned with a study of the position, social background, career development and mobility of persons in executive positions in the world of business (e.g. Granovetter 1974, Laaksonen 1962, Ahlstedt 1978, Hajba 1982). Central here are in most cases mechanisms associated with business management at the level of the individual, those which select for management and channel capacities in this direction (On various views at different periods see for example Sonnenfeld & Kotter 1982).

Within this particular line of inquiry, again, two different approaches may be distinguished; one might be termed macrosociological, the other psychologistic.

In the former, sociologically oriented tradition, attention has focused on class structures, training institutions and even business managers from an impersonal standpoint, leaving rather aside such questions as why selection takes place into certain spheres of work life and how for example social background determines career development - and this despite the specific weighting of the individual manager in such studies. Likewise those mechanisms at firm level are largely ignored which make for the determination of qualification criteria firms apply, in other words the economic logic underlying the personnel recruitment procedures of firms (see e.g. Whitley 1980, Littler 1982, chapter 2; also Tainio 1981).

Correspondingly the psychologistic types of study place their emphasis on the psychic processes underlying choice of career training (e.g. Häyrynen et al. 1982), little attention being paid to the influence of macrosociological phenomena in moulding human consciousness.

The second point of departure in studies of the formation of managerial capacity involves consideration of the training institutions providing the basic knowledge necessary for functions at managerial level (see e.g. Thomas 1980, Whitley et al. 1981). This viewpoint emphasises the significance of mechanisms in the social structure which govern the establishment and development of training institutions - the basic assumption being that the key factor in the formation of managerial skills are the training institutions through which future business executives are selected (A comprehensive survey of the relationship between trainig and society, see Murphy, 1982).

2. Research material

A number of studies have been undertaken as part of the follow-up of the 1977 degree reform in the Helsinki School of Economics (The earlier lower degree was expanded into a Degree of Master of Business Administration). One of them concerned the placing in work life of students completing the new form of degree. A total of 152 graduates, in order of graduation, were interviewed between three and six months after completion of studies. The interviews inquired into their present employment and the process of search for it, and their eventual placing together with their family and study background and their entire history of work experience up to that point. Record was also made of their future career plans.

Since the original interviews of these 152 graduates, collection of data has continued by means of a questionnaire drawn up on the basis of the interview form. Hitherto 146 of those approached have responded.

One limitation to this material is that the 298 persons in question represent those making most rapid progress in their studies. It must be mentioned, moreover, that at the time these students completed their courses they entered a kind of vacuum prevailing on the labour market. The degree reform meant a protraction of study time, so that those studying under the old system had already completed their courses and those taking the new degree had not.

3. Summary of research results hitherto

The importance of the School of Economics in the formation of business management capacities is indeed considerable: it is, after all, the specific task of this institution to train students for positions in society which call for a knowledge of economics and business administration. Any study of the format-

ion of managerial capacity, however, must also take account of factors such as work experience and study background, and above all of family background, which, apart from exerting in many cases a direct influence on choice of career, also lays the foundation for those cognitive processes which, either consciously or unconsciously, regulate human behaviour in general.

As to the School's role in society and specifically in society's processes of reproduction, it may be said that this institution fulfils the function ascribed to it: as many as 70 % of its graduates have taken up employment in the direct service of business, and almost all of the remainder in organizations directly (i.e. in the business sector) or indirectly (research institutes and training establishments) serving the business world, most of them in expert functions.

In general it may be said that the differentiating factors in the work placement of these graduates are sex, social background and work experience both during and prior to studies in the Helsinki School of Economics.This is manifested in respect of type of organization entered, type of work employed in, and difficulty in finding employment.

In the case of sex it clearly emerges that women have greater difficulty in placement on the labour market in general, and tend, moreover, when once placed, to function in positions lower down the organizational hierarchy than men. The explanation here is to be found no more in study success than in work experience, for women's study progress, whether measured in terms of examination grades or time taken to complete studies, is more or less on a par with men's, and as to work experience women in some cases have even more than the men involved. Nor would social background appear to exert an influence here. The explanation must then be sought in the recruiting criteria firms apply, these evidently favouring men.

These criteria are in most cases latent, so that no actual sex

discrimination is seen to take place; their influence is rather manifested in that firms in their selection processes give weight to "manly" qualities, that is to qualities which the prospective employer considers men to possess in greater measure than women (In reality no such differences exist; see e.g. Steinberg & Shapiro 1982).

In assessing the significance of social background and work experience for placement in work life account should be taken of what have come to be termed social networks. (On the effect of networks on job attainment see e.g. Granovetter 1974, Lin et al 1981.)

These networks may be subdivided into two groups according to the closeness of the ties involved - one may speak of strong and weak networks. The stronger entail family relationships and friendships (to some extent those arising through family contacts but otherwise such as have been established in youth and childhood). Such a system of ties is to a considerable degree class-bound, that is, contacts lie within the same social stratum. The weaker type of network is, in contrast to the former, of a more casual nature, ties being established in many cases during study years and/or at work, and often (particularly among graduates) they lack entirely the features of class bounds.

The effect of work experience on success in obtaining employment is in general clearly manifest: the more experience an applicant has, the more easily he will find work and the higher he will be placed in the hierarchy he enters. The only exception here are certain trainee positions, where work experience is not necessarily considered a solely positive factor. On further point in this connection is that social networks acquired through work contacts frequently influence possibilities of placement rather than work experience just as a form of capacity.

To give some idea of the significance of social background the following tabulation groups MBA graduates according to the pro-

fession of father or head of family:

highest business executive	18 %
intermediate managerial	10 %
private entrepreneur	12 %
agricultural entrepreneur	13 %
highest executive in public sector	15 %
intermediate executive in public sector	12 %
working class	21 %

Social background exerts a twofold influence on work placement. The first is reflected through the social network, in that contacts involved in family backgrounds associated with business life mean above all a potential awareness of vacancies on the labour market at any given moment.

Such strong networks, moreover, frequently direct a newly graduated MBA into a particular organization, possibly even to a particular function in it. Most manifestly, however, the strong network facilitates the search for employment: those whose social ties involve a background in the business world find employment more readily than those with no matter how solid a network of contacts acquired in the course of work experience.

The second mode of influence of social background is less easily definable, being rather of the same nature as the influence of sex - in other words, the recruitment criteria of business enterprises stress qualities which in this case might be described as "natural managerial potential" (At the time business schools were being set up in Britain there was fierce debate as to whether managerial capability must be regarded as innate or whether it can be learnt; see e.g. Thomas 1980). Here "natural" means that the graduate's father or family head has either occupied a position in the highest executive stratum in the business world or has been an entrepreneur, in which case the children of the family will have internalized certain basic aspects of society's economic functions and thus in a way formed

a picture of business activity before ever embarking on studies in the School of Economics (On such influences of background on consciousness see e.g. Willis 1977, also Fidler 1977, Kwong 1983).

Analysis of the social background of the graduates involved in the present study shows that 30 % of them come from families of this type. Work placement has clearly proved easier for this group that for those from other backgrounds. No differences are to be discerned in respect of type of organization or type of function - in other words the work profile of the MBA is about the same regardless of background.

The selection criteria in the case of this group have largely stressed family relationships and sponsor ties (that is, network influence), together with a more forceful approach to interviews and success in personality tests.

In respect of study background one interesting feature emerges, namely that as many as 55 % of MBAs approached had, in addition to their degree, completed other college or university level courses. This observation is rendered particularly interesting by the fact that of those of working class origin 63 % had such histories. In the main such prior studies were of commercial college level (48 %). In contrast, "only" 40 % of children of highest executives had such additional study qualifications, and these, again, were to a marked extent of university level (23 %).

What emerges from the foregoing is that MBAs have in addition to their studies in the School of Economics a certain basic potential. In this a number of factors are involved; apart from family background we may distinguish other studies and/or work experience. Graduates without any of these components in their background - in other words, who entered the School on the strength of their matriculation papers alone, who during or prior to their studies had only summer jobs, and whose back-

grounds were not strongly associated with the world of business, comprised no more than 7 % of the entire group studied. For this minority, placement in work life has on the average proved difficult, and they have subsequently functioned in more modest capacities in their field.

In spite of the above findings the role of the Helsinki School of Economics in the formation of managerial capability is on the whole an important one; after all, over 90 % of MBAs have taken up positions for which one specific requirement has been a School of Economics degree. Equally important to note on the other hand is that MBAs clearly possess other basic potentials which for their own part make for recruitment into positions calling for business managerial capacity.

REFERENCES

Ahlstedt, L. 1978. Erikoistuminen ja liikkuvuus liikkeenjohtajan urakehitystekijöinä. (Functional specialization and mobility in the career development of the Finnish manager). Acta academiae oeconomiae Helsingiensis A:25. Helsinki. English summary.

Fidler, J. 1977. The British business elite: recruitment and attitudes to social stratification. The University of Aston Management Centre, working paper series 64.

Granovetter, M. S. 1974. Getting a job. A study of contacts and careers. Cambridge, Mass.: Harvard University Press.

Hajba, S. 1982. Yritysjohdon ammatillistuminen ja valikoituminen osana yritysten institutioitumista. (The professionalization and selection of management as a part of the institutionalization of firms). Publications of the Turku School of Economics A 5. English summary.

Häyrynen, Y.-P., Häyrynen, L., Jaakkola, R. & Tormulainen, T. 1982. Academic career study : a framework for a 17 years

longitudinal study. Joensuun korkeakoulu. Kasvatustieteiden osaston selosteita ja tiedotteita 31.

Kwong, J. 1983. Is everyone equal before the system of grades: social background and opportunities in China. British Journal of Sociology 34, 93-108.

Laaksonen, O. 1962. Suomen liike-elämän johtajisto. Sen sosiaalinen liikkuvuus ja koulutus. (Finnish business leaders. Their social mobility and educational background). Helsinki: WSOY.

Lin, N., Ensel, W. & Vaughn, J. 1981. Social resources and strength of ties: structural factors in occupational status attainment. American Sociological Review 46, 393-405.

Littler, C. R. 1982. The development of the labour process in capitalist societies. London: Heinemann.

Murphy, R. 1982. Power and autonomy in the sociology of education. Theory and Society 11, 179-203.

Sonnenfeld, J. & Kotter, J. 1982. The maturation of career theory. Human Relations 35, 19-46.

Steinberg, R. & Shapiro, S. 1982. Sex differences in personality traits of female and male master of business administration students. Journal of Applied Psychology 67, 306-310.

Tainio, R. 1981. Labour selection as a part of managerial strategy formulation in a firm. European Institute for Advanced Studies in Management, working paper 81-13.

Thomas, A. 1980. Management and education: rationalization and reproduction in British business. International Studies of Management and Organization 10, 71-109.

Whitley, R. 1980. The impact of changing industrial structures on business elites, managerial careers, and the roles of business schools. Ihternational Studies of Management and Organization 10, 110-136.

Whitley, R., Thomas, A. & Marceau, J. 1981. Masters of business? Business schools and business graduates in Britain and France. London: Tavistock.

Willis, P. 1977. Learning to labour. How working class kids get working class jobs. Westmead: Gower.

PART III

ANNIKKI JÄRVINEN
STUDY IN A MULTIDISCIPLINARY TRAINING PROGRAMME:
A FOLLOW-UP OF STUDENTS OF MEDICINE

ANITA NUUTINEN
THE DEVELOPMENT OF STUDENTS' SCIENTIFIC CONCEPTIONS
OF THE WORLD

KARI NIINISTÖ
EVALUATION OF COGNITIVE STRUCTURES AND PROFUNDITY
OF THE LEARNING PROCESS

Annikki Järvinen

STUDY IN A MULTIDISCIPLINARY TRAINING PROGRAMME - a follow-up of students of medicine

ABSTRACT

Study in the medical sciences is by nature multidisciplinary, involving elements of the natural sciences on the one hand and on the other training in the social and behavioural sciences. The present study sought to establish whether the far-ranging objectives of medical training are reflected in students' patterns of thought, particularly in their conceptions of science and of the nature of health. The mode of treating responses developed for this inquiry was phenomenographic. The follow-up was carried out in the period 1977-1983. It showed medical students' conceptions of science to alter even within their first two years, becoming method-centred and stressing the pre-eminence of the natural sciences, attitudes which then remain firm to conclusion of studies. Definitions of health likewise narrow rapidly during the initial years of study, and in only few cases broaden again towards conclusion.

1. Points of departure

Training in the medical sciences has for several decades now been subject to powerful pressure to change. These pressures arise from both health and educational policies evolved in a period of marked social development, and the rapid advances in the medical sciences themselves. In the health policy sector the continuously expanding and diversified health services set the profession and training for it objectives which the traditional biomedical training model is no longer able to cater for. Likewise developments in the professional structure of the health services have led to a revision of the physician's professional profile. In many countries medical training has also been subject to the degree reforms carried out in all fields of

higher education; this has been the case in Finland, and here as elsewhere the professional and scientific objectives of training have come in for review. Within the science of medicine two distinct trends may be discerned: on the one hand new and ever more specialized branches are rapidly emerging, while on the other there is notable pressure to integrate the modes of approach of the various disciplines - as for example in the public health sciences. Such developments call also for a reconsideration of the content of basic training and its relation to specialized studies. - During the 1960's the WHO adopted a particularly active role in developing medical training, arranging among other things a number of international congresses on the theme. Experimental schools or faculties were established in many European countries and in Canada with a view to reforming the content and teaching methods of medical training more boldly than would have been possible in the old-established centres.

Especially the following innovations habe been repeatedly called for in the reform of medical training programme:

a) The physical, psychic and social aspects of illness and health must be taken into account in training. The medical degree should include studies in psychology and sociology.
b) Training in primary health care should be developed to widen instruction and practice in that.
c) Over-specialization and isolation of various fields of training should be reduced by integration. This would mean for example integration of biomedical science with the social and behavioural sciences and with clinical science.
d) Attention should be paid to students' study and learning habits and instruction should be developed to support these.
e) Development of the student's personal professional development should be promoted.

In spite of the numerous attempts at reform criticism continues unabated. Medical faculties are said to be extremely rigid and reluctant to introduce changes in their training - the situation

has even been claimed to be worse now than some decades ago (Simpson 1972 and Maddison 1978). Especial concern has been expressed as research findings increasingly reveal an intensified cynicism and lack of humanity in medical students in the course of their studies (idem). The latest extensive survey of requirements for the development of medical training is the GPEP report drawn up by AAMS: Physicians for the Twentyfirst Century (1984). In addition to the recurring features in earlier publications this report contains a number of new elements. It stresses the need to evolve selection criteria. This implies disappointment in the possibilities of training itself to influence either study approaches or students' attitudes. A further new feature in the report is a call for more attention than hitherto to different learning styles and students' personal development.

Reform of medical training had already been a subject of dicussion in Finland in the 1960's. Two training centres were established, whose particular objective was the development of a new type of training (the University of Kuopio, 1972, and the Faculty of Medicine in the University of Tampere 1972). These units did indeed from the outset seek in their training programmes to increase their contribution to public health sciences and especially primary health care and to integrate their teaching. At the same time the old medical faculties in Helsinki, Oulu and Turku introduced their reforms of degree courses. The 1975 Statute governing medical degrees brought uniformity in the structure of training courses in the various faculties, but differences in content in fact remain, especially in teaching in primary health care and public health sciences. The structure of medical training in Finland is similar to that in most medical faculties throughout the world. The degree course lasts six years. The preclinical stage takes from two to two and a half years, comprising courses in the natural and biomedical sciences, psychology and sociology. A period of clinical studies involves both theoretical instruction and supervised practicals in hospitals and health centres. Theoretical courses in public

health sciences are variously placed in the syllabus in the different faculties. The degree also involves internship lasting five to six months.

2. Medical training and pedagogics of higher education

University study has traditionally comprised work in one field, the major subject. The main objective has been to acquire the mode of thought appropriate to this subject, together perhaps with some practical applications in work life. Study of subsidiary subjects has often been somewhat random and not integrate with other studies. The degree reform carried out in Finland in the 1970's has not as yet brought much change to this old structure. In contrast, training in medical science may be regarded as multidisciplinary; it constitutes higher educational teaching in fields which are not considered to belong to the same "family" of sciences - for example the natural sciences and the social sciences; it also involves a variety of research objects and methodology. The aim of multidisciplinary training should be to appraise phenomena from the standpoints of different branches of science. It should nevertheless be borne in mind that multidisciplinary training is not the same thing as integrated training.

Research activity and publication on the subject of medical training has been lively. As with research on higher education in general, the emphasis in studies of this field of teaching has for some decades been on the efficacy of instruction, the examination system, teaching methods and syllabus planning. It was not until the 1960's that more attention turned to students' attitudes, and only quite recently have there seen signs of a growing research interest in the styles and processes of student learning and thinking - this in the medical training sector as in other disciplines. Such an area of research is of particular

interest in the case of medical training in that while the scientific structure of courses is multidisciplinary to the point of diffusion, but the objectives are to a marked degree conceived within an overall framework, namely awareness of the psychic, physical and social dimensions of illness and health.

3. Object of study

The repeated, identically framed demands for a reform of medical training raise the question whether analysis of the problems of multidisciplinary programmes should pay particular attention to the development of students' thinking. Here interest would focus on whether students form a personal conception of the diverse scientific approaches involved in their training, and how the wide range of their studies possibly reflects in their conceptions of health and illness.

During the last decade a line of approach has developed in the field of higher educational research which concentrates on the relations between learning processes and content. According to this approach the student is actively involved in selecting, interpreting and producing knowledge, and during the learning process himself modifies qualitatively his conceptions of reality. The present undertaking is allied in objectives and frame of reference to the same series. No contentual comparison was possible in the early years of the study, because similar studies were not undertaken until the latter 1970's. (Marton & Svensson 1979 and Nuutinen 1981). The author here has sought to approach the thinking and the conceptual world of students by way of a phenomenographic research model. The objects were

1. to describe the conceptions of scientific research held by medical students, their conceptions of health and development in these in the course of their studies,

2. to describe the formation of the ideal professional image in the final stages of study, and
3. to analyse the connections between various background and study factors and various types of training programme and the development of science and health concepts and ideal professional images.

One particular problem repeatedly encountered in medical training is that of integrating studies in the social and behavioural sciences with those in the natural sciences. The inclusion of these subjects has been considered essential in that the traditional biomedical model has proved inadequate in studies of the nature of illness (Engel 1977 and Hofman 1976).

The first section of this study sought to describe how the broad-based training objectives in medical studies are reflected in students' conceptions of natural vs. social sciences and especially the way they envisage health.

The second and third phases of the inquiry are not described in this article but are to be included in a later, more extensive research report.

4. Method

The items on the questionnaire dealing with definition of students' views of scientific research and health were framed as open questions to which respondents were asked to reply in their own words.

The descriptive system to deal with replies was created on the basis of the material collected. The technique might be characterized as phenomenographic - an approach more extensively treated in an article by Marton (1981). When the present inqui-

ry was initiated in August 1977 no research data were as yet available on corresponding aspects. Considerable time was devoted to analysis and classification of responses. In autumn 1977 a research project of corresponding type was commenced in Sweden (Dahlgren & Pramling 1981).

On the basis of the material collected in 1977 a preliminary classification was established. Thereafter two persons made their independent classifications of responses. There were few doubtful cases, and for these the appropriate category was sought by joint effort. The same classification was employed for the 1979 material, and again two persons separately assessed the replies received. Again only few cases proved problematic. However, on the basis of the 1979 material it became necessary to increment the system of classification.

It was sought in the classification model to take account in as great detail as possible of all features emerging from the responses to the questionnaire. In the first phase a reply might thus be classified according to a variety of aspects it evinced. This phase might be characterized as a general appraisal of responses. Thereafter attention turned to the kinds of combinations of qualities occurring in them. A hierarchy began to emerge, and the classes could be placed in order of increasing profundity, i.e. from superficial to more penetrating or comprehensive. For an assessment of change a combination variable was formed, each student´s answer to each question being classed according to the "highest" quality evinced. At the same time the overall impression of each reply was also assessed. The 1983 answers were classed directly according to overall impression.

One result of this study in itself was the creation of such a classification of describing conceptions of science and health. The categories arrived at advance from narrow definitions to comprehensive views, which renders the classification cumulative in that the higher categories subsume the objects, qualities and

relationships of the lower.

5. Changes in students' scientific thinking in the years 1977 - 1979 - 1983

5.1. Respondents

The questionnaire devised for this inquiry was put to students commencing medical studies in four faculties and this procedure was repeated in 1979 and again shortly before completion of studies. This latter point varied from one faculty to the other and from student to student between December 1982 and December 1983. In the case of one particular question a control group was formed of students of social sciences from Jyväskylä and Tampere Universities.

In 1977 a total of 406 students commenced studies in the four training centres in Helsinki, Kuopio, Tampere and Turku, and in August of that year 373 (92 %) of them replied to the questionnaire. In all, 262 students replied to both the 1977 and the 1979 inquiry - that is, 65 % of the original cohort. Thereafter 31 students had dropped to the lower course or dropped out, leaving 231 recipients of the 1983 questionnaire; of these, 141 (61 %) had responded by the end of January 1984.

5.2. Students' conceptions of the nature of scientific research

The open question posed at the respective time-points was the following: "What characterizes scientific research - in other words, what is it that makes research scientific?"

The classification of answers was as follows:

External criteria
1. Financial, administrative and political criteria for scientific research
2. Motives for research (study of new phenomena, profitability etc.)
3. Criteria of pluralism and objectivity

Criteria of method
4. Criteria of method (experimentation, causality, precision, repeatability etc.)
5. Criteria associated with the starting-point of research (basis in earlier findings, hypotheses etc.)

Internal criteria
6. Criteria inherent in theory and the systematic nature of scientific knowledge (concepts, laws)
7. Criteria associated with the scope of knowledge (understanding of phenomena, overcoming the limits of everyday awareness)

In 1977 of the total eventual cohort (N = 141) nearly 30 % mentioned as criteria of scientificity the internal criteria, that is the systematics of knowledge and/or the overall vision of the scientific approach. However, just nearly 15 % of these had by 1979 changed their conception, giving external criteria, and just under 10 % had adopted methodological criteria, so that in 1979 fewer that 10 % of the respondents mentioned internal aspects of scientificity. This figure remained unaltered in 1983. In 1977 a little under 50 % of respondents gave external criteria, and 21.3 % methodological. The proportion mentioning external aspects remained the same in 1979, while there was an increase in the proportion giving methodological criteria (41.8 %).

For 1983 the figures for all categories of criteria are unaltered from the 1979 replies. Apart from the fact that a considerable number changed their answers from internal to external criteria between 1977 and 1979, a notable proportion (some 17 %)

also shifted from external to methodological criteria. Between 1979 and 1983, again, almost the same changes took place from methodological to external and from external to methodological.

All in all the greatest change in students´ responses describing scientific research activity took place during the first two years of study. A quarter of the cohort shifted emphasis from internal to methodological and external criteria. Thereafter and to the close of studies no significant change took place except for variation within the two categories, methodological and external.

5.3. Students´ conceptions of differences between research in the natural sciences and social sciences

This item on the questionnaire ran as follows: "In your view, does research in the natural sciences differ from research in the social sciences? If so, in what way?"

With a few exceptions students answering the 1977 and 1979 questionnaires defined the difference they perceived from the standpoint of the natural sciences, emphasizing the superiority and scientificity of these. No actual classification of replies could thus be made.

In the 1983 inquiry a following classification could be evolved:

1. Research in the natural sciences is more objective, tougher, more scientific, more theoretical and more experimental.
2. Superficial description or mention of differences between the objects of research.
3. Analysed internal description of the objectives of research.
4. The methodological aspect; (consideration of theme: the natural sciences are more exact and the social sciences more understanding and interpretive).
5. Description of differences in research philosophy.

Between 1979 and 1983 responses showed some development in the direction of analysis of differences between the two fields of research. In year 1983 19 % left the question unanswered, 61 % stressed the superiority and scientificity of the natural sciences as before, while nearly 20 % sought more precise definition of the differences in objective between the two disciplines, their differences in methods and approaches.

The replies of the students of social sciences and behavioural sciences used as controls differed from those of the medical students in 1979 in the following respects:

- The students of the social and behavioural sciences analysed the differences in object of research in the two disciplines slightly more profoundly than the students of medicine (1977-79), and third-year students of psychology in many cases analysed the peculiar quality of human activity.
- The analysis of objects of research in the social sciences was more developed in the students of the social and behavioural sciences than was their grasp of the nature of the natural sciences.
- Only rarely did these respondents place research of the two disciplines in any order of superiority, in contrast to the general case among the students of medicine.

5.4. Definitions of health

Here the question ran: "Define in your own words the concept of health."

The classification arrived at was the following:

1 Definitions referring to physical and/or psychic state
- 1 Absence of disease: physical balance
- 2 Psychic balance
- 3 Maintenance of balance between psyche and organism, a state of psychic and physical well-being

2 Definitions based on a conception of reciprocal influence between the individual, the organism and the environment
- 4 Undisturbed interchange between psyche, organism and environment
- 5 The individual is active and purposive

Of the 1977 respondents 68.8 % defined the concept of health in terms of physical and/or psychic condition, the essential criterion being the absence of disease and balance between psyche and organism. A good 30 % defined health as a matter of the relations between psyche, organism and environment, mentioning also the aspects of activity and purposiveness of the individual. In 1979 the corresponding figure were 83.7 % and 16.3 %. Of the total cohort 26.2 % changed their conceptions from broader to narrower, 11.4 % the converse. By 1983, again, the situation reverted to that of 1977; just under 68 % defined health in narrow terms of physical and/or psychic state, while 32.6 % took the broader view of health as involving an interchange between psyche, organism and environment and aspects of activity and purposiveness of the individual.

The first two years of study comprise courses mainly in the natural sciences and biomedicine, so that students' conceptions of health tend to be narrower than at the commencement of studies. After courses in the clinical sciences, again, the definions envisage broader dimensions. It must nevertheless be

noted that some 60 % of the students retained throughout their study years a somewhat narrow view of the nature of health.

5.5. Summary of changes

The great majority of new students of medicine stress as the peculiar features of scientific research the external criteria - financial, administrative, motives for research, profitability, pluralism of values etc. However, one third of them at the beginning of studies mention criteria involving theory and systematics and criteria of the scope or coverage of data. Two years later this group had dwindled to less than 10 %, while mention of method and external criteria increased. This situation was to remain unaltered to conclusion of studies.

New students laid great stress on the superiority of the natural sciences and the scientificity of this discipline as against the social sciences. By the final study year, however, responses were more developed in that some 20 % took a more analytical view of differences between these two sciences.

Development in conceptions-of-health were in the same direction as those in the above-mentioned variable during the first two years of study; definitions narrowed markedly. While over 80 % of 1979 respondents gave definitions predominantly based on physical and/or psychic state, the responses towards the close of studies were of broader conception; the same number of respondents as at the outset, a good third of the cohort, reverted to definitions which envisaged reciprocal exchange between individual, organism and environment and manifestations of an active and purposive approach to life in the healthy individual.

At the commencement of medical studies women students gave broader and more comprehensive definitions of health than men. Especially women students from the middle class diverged from the rest in holding broader conceptions of the nature of health.

After two years the difference between definitions of health given by women and men almost disappears. In the final stages of study in 1983, with some experience of the physician's work, the difference between the sexes appears to return, with the exception that men students from the higher class now gave broader definitions of health.

New students embarking on courses in medicine envisaged for the most part a narrow conception of health, a predominantly pragmatic view of scientific research activity and a sense of the superiority of the natural sciences over other disciplines. This tendency was markedly intensified during the first two years of study, during which courses are mainly centred on the natural and the biomedical sciences. At the very close of studies, however, both conceptions of health and views of research in the natural and the social sciences show some qualitative development in a small proportion of the students.

6. Discussion

It would appear that the problem of teaching the social and behavioural sciences in medical training programmes continues to lie in insufficiency of integration. The "atomistic" nature of curriculum is reflected in the nature of students' learning (Jacobsen 1981) and will not contribute to a holistic approach.

An integrating element in instruction and studies could be analysis of the work of the physician (Doran 1983). A more scientific analysis of the physician's work processes also opens up new perspectives for cooperation in the teaching of psychology and sociology. In this way the student may proceed from the learning of various external role models to insight into his own work and the professional development of his personality. Experiences the student has acquired either prior to or during

studies should be integrated into instruction, and attention should be devoted to the development of the student's self-knowledge. One obstacle to this development may in some cases be professionalism, whose position in the course of training is extremely interesting (Haas & Shaffir 1978). The broad aims of training and the rigid traditions of the profession as mediated through teaching staff are in conflict, and it may well be that the various forms of professionalism will already during training hamper the success of the reformed training programme. However, further must be done before this claim can be confirmed.

REFERENCES

Dahlgren, I. O. & Pramling, I. 1981. Högskolestudier och omvärldsuppfattning. Göteborgs universitet. Pedagogiska Institutionen 1. In Swedish.

Doran, G. A. 1983. Scientism vs humanism in medical education. Social Science Medicine 17 (23), 1831-1835.

Elizur, A. & Rosenheim, E. 1982. Empathy and attitudes among medical students: the effects of group experience. Journal of Medical Education 57, 675-683.

Engel, G. L. 1977. The need for a new medical model: a challenge for biomedicine. Science 196 (4286), 129-136.

GPEP REPORT 1984. Physicians for the twenty-first century. Report of the project panel on the general professional education of the physician and college preparation for medicine. Journal Medical Education 59 (11) part 2, 1-208.

Haas, J. & Shaffir, W. 1978. Do new ways of professional socialization make a difference? DIALOC Soc. Abstr. 0088076 78S08312 Canada.

Hofman, B. 1976. The social sciences in the medical faculties: background, benefits and problems. Higher Education and Research in the Netherlands 10 (1), 9-13.

Jacobsen, B. 1981. Collection type and integrated type curricula in systems of higher education. Acta Sociologica 24 (1-2), 25-41.

Maddison, D. C. 1978. What's wrong with medical education? Medical Education 12, 97-106.

Marton, F. 1981. Phenomenography-describing conceptions of the world around us. Instructional Science 10, 177-200.

Marton, F. & Svensson, L. 1979. Conceptions of research in student learning. Higher Education 8, 471-486.

Nuutinen, A. (1981) Tieteellisen koulutuksen tuottamasta maailmankuvasta. (Conception of the world produced by scientific education.) In M. Panhelainen (ed.) Korkeakoulutus tutkimuksen kohteena. (Higher education as a field of research.) University of Jyväskylä. Institute for Educational Research. Bulletin 179, 95-121. English summary.

Simpson, M. A. 1972. Medical education. A Critical Approach. London: Butterworths.

Anita Nuutinen

THE DEVELOPMENT OF STUDENTS' SCIENTIFIC CONCEPTIONS OF THE WORLD

ABSTRACT

The object of this study was to describe the development of students' scientific conceptions of the world in the course of their university studies. The process of learning and the development of the scientific mode of thinking were analysed by a cognitive approach. The chief means of data collection for this longitudinal study was the theme interview. The material obtained during the interviews was analysed by phenomenographic analysis into qualitative descriptions. At its present stage the project concentrates on studies in psychology and biology, the data hitherto available pertaining to first- and third-year students. The article presents a part of the results, namely observations of students' conceptions of scientific knowledge and development taking place in these during their earlier study years. The interviews elicited five main types of conception: 1) scientific knowledge is remote, difficult and prestigious, 2) scientific knowledge is knowledge arrived at by certain special techniques, 3) scientific knowledge is the truth, which cannot ever be refuted, 4) scientific knowledge is knowledge which should be applied for man's benefit, and 5) scientific knowledge is an assumption or model constructed of reality, and it is developing all the time.

1. Scope of the study

The objective here was to describe the process by which a student's scientific world view evolves in the course of his university studies. World view in this context means primarily the approach the student adopts towards reality and real phenomena and the constant aspiration to greated precision in the conceptions already formed of the world. A further aspect of the world view is the extent to which the student is familiar with the

conceptions prevailing in his discipline as to the nature of phenomena falling within its sphere.

The results to be presented constitute part of the findings in more extensive project (Nuutinen 1981, 1982a-b, 1983, 1984). For the purposes of the analysis the description of the emergence of a scientific world view was divided into three subsections:

1) What approaches and learning strategies do students adopt in their studies, and how do these develop in the course of higher education?

2) What conceptions and meaning contents are formed as a result of study of the phenomena and basic concept of a given discipline?

3) What connections can be discerned between students' approaches and study strategies and the conceptions they arrive at?

An article has previously been published describing first-year students' learning strategies and the conceptions of psychology students regarding normal and deviant behaviour and those of biology students regarding pollution phenomena. Account was also taken of connections between the conceptions evolved and the study strategies employed (Nuutinen & Väänänen 1981). The same report also describes the background, theoretical frame of reference and method of that study.

The scope of this presentation is an empirical description of

1) what students understand by scientific knowledge and
2) how the student's conception of scientific knowledge develops in the initial phase of his studies, during which attention focusses on current methodology, techniques and theories prior to any participation in practical work or in research in the

professional field in question.

2. Students involved and their stage of studies

The study involved all first-year students commencing their studies in psychology in one university (N=29) in 1980, and half of those commencing biology studies (N=20) in one university in 1981. These subjects were interviewed at the end of their first year in spring 1981 and 1982, and at the end of their third year of studies in spring 1983 and 1984.

3. Method

The study approaches the learner as an active agent in the learning process and the creation of a world-picture. The important element here is the subjective interpretation of reality and the theoretical and methodological means of revising this interpretation. Attention thus centres on learning as an act, as deliberate and purposive activity (Nuutinen 1983). Elements of this approach are the concept of act and the practical syllogism model of von Wright (von Wright 1971a-b and 1976) and the impulses derived in the field of psychology from the discussion among philosophers of the concept of intentionality (Niemi 1975).

From the standpoint of method the description is of learning from the learner's point of view. As this analysis of learning as an act brings to the fore the inner, as opposed to the outwardly perceptible aspects of the process, a method was needed which makes these accessible. The methods employed in the phenomenologically based psychology derived from the work of Husserl by Ihde (1979) and Giorgi (1975) afforded the desired approach.

Marton and his co-workers (1981) further elaborated the method for the empirical study of learning, and termed the approach phenomenography. This diverges from the approach of Giorgi above all in that the Göteborg group seeks to describe the phenomenon of learning over its entire variation - "to describe the world-as-people-experience-it" (Alexandersson 1980), whereas Giorgi stresses the essential aspect of it arrived at by reduction - "to describe the world-as-experienced".

The approach overall is in keeping with the model of Karl-Otto Apel (Pietarinen 1982) in that it combines the various levels of analysis employed in the study of man: Initially the researcher seeks by means of hermeneutic dialogue to outline the range of variation in the manifest image of the phenomenon (in this case the conception of scientific knowledge) as evinced in the course of the subject´s self-analysis. The dialogue proceeds by way of an interview on explicit themes (cf. Hirsjärvi & Hurme 1979), the themes being sufficiently extensive and the approach proceeding towards deeper levels of the material elicited from the learner. Such an interview might for example evolve as follows:

Interviewer: And then there is such a thing as scientific knowledge - what do you understand by that?

Student: Scientific knowledge is more exact, it´s got to be proved.

Interviewer: How can it be proved?

Student: There are all sorts of tests, and they are studied in different ways, isolated in experiments and all.

Interviewer: Is it this accuracy and precision which distinguish knowledge and scientific knowledge from each other? Are there any other differences?

Student: Scientific knowledge is a bit more abstract. At least they try to say it in such difficult language that not everyone can understand it, so that it sounds finer than what it really is. But I don´t know in the end is there all that much difference after all. Even scientific knowledge does always

turn out to be right.

Interviewer: Well, is there any difference in the way the two kinds of knowledge are acquired?

Student: I dunno ... never thought about it, whether there's any difference...

On the basis of this range of manifested conceptions the researcher then carries out a so-called positive reduction, that is, eliminates the irrelevant. In this way it becomes possible to arrive at a description of the phenomenon by types, a descriptive system which allows of scientific treatment of it.

4. Results

The objective in higher education is to train individuals capable of producing new knowledge in their chosen fields. In this process the primary means is the application of the scientific method. While by no means all students even aim to become researchers, their training nonetheless aims to imbue them with the capacity for scientific appraisal of whatever their work - as psychologists, as biologists, for example - may involve. In the case of a psychologist this implies that in his diagnoses he can apply an analytical approach and on this basis form a hypothesis as to the factors involved in the situation: from this in turn he can draw up a plan of therapy and at the same time can actively test both his assumptions as to the phenomenon/crisis to hand and the appropriateness of his treatment. In the case of a biologist, again, application of the scientific method would mean, for example in the case of pollution phenomena, the formation of model, a description of the processes involved, on the basis of which he may then instigate measures for environmental improvement, whose success again is kept under constant observation.

For these reasons the present investigation set out to establish what students understand by scientific knowledge and how their conceptions of it, the subjective meaning content of the notion, develops during the first three years at university.

4.1. Types of conception of scientific knowledge

The results of the interviews revealed five main types of conception among students as to the nature of scientific knowledge. These will be set out in the following in an order expressive of the dimension evincing the extent to which each subject considered himself capable of producing scientific knowledge. The typology was formed initially on the basis of interviews of first-year psychology students. Interviews of biology students elicited no conceptions necessitating revision of these chief types. A number of differences in content observed between specific disciplines will be taken up in discussion of the respective types. Likewise no elements were revealed in third-year interviews which would have called for alteration to the descriptive system arrived at.

The following types of conception were manifested in the interviews:

1) Scientific knowledge is remote, difficult and of great worth.
2) Scientific knowledge is attained by means of certain special techniques.
3) Scientific knowledge is the truth, the definitive, irrefutable explanation of some phenomenon.
4) Scientific knowledge is knowledge which should be applied for the benefit of man.
5) Scientific knowledge is an assumption, a structured conception of reality, and it is constantly developing.

Those students who regarded scientific knowledge with a sense of awe and reverence felt that it was something which is produced

in particular establishments, universities and research institutes:"...It's the sort of obscure knowledge that goes over your head, you don't understand it ... the sort of thing that doesn't really have anything to do with normal life." The producers of scientific knowledge are members of a certain profession, scientists, professors, and the knowledge they produce is difficult, beyond the reach of the average man's understanding. Some students were of the opinion that not even the knowledge in their own discipline was scientific, that scientific knowledge was only attained in fields which they could not master, for example in theoretical physics or in philosophy.

Among those who thought that scientific knowledge can be attained by various special means or techniques were some whose notion of the techniques in question was extremely diffuse. They mentioned that such knowledge is acquired by research, or that scientific knowledge is knowledge which is published, and in such publications a special language is employed. Some, again, made more specific mention of various methodical criteria, for example that the data in question must be produced by statistical methods, experimental procedure etc. or that it is reported in the terminology of the field in question: "... it's collected by scientific methods. It has to be as reliable as possible. I mean, it has to be accepted in scientific circles. It must be repeatable in experiments so that you can compare whether some study is right."

The great majority of students felt that knowledge was scientific when the truth was arrived at, when a final explanation was found for some phenomenon. This truth could then no longer be refuted: "...it's sort of sure, tested and exact so that you can base your own thought on it. It's based on controlled conditions and it's not just what somebody thinks, it's genuine knowledge about the way things are." Among those students who demanded of scientific knowledge this quality of veracity some mentioned as criterion of truth the application of certain methods or techniques, for example experimental procedure or a

statistical approach. Others, again, proposed as criterion the possibility of connecting observations with those already made in the scientific community, either in that they support these or repeat them in identical conditions. A third group required that research findings should cover the phenomenon to be explained in a relevant manner. It is interesting that those classed in these subgroups showed no overlapping of the respective criteria.

Some of those interviewed imposed no criteria for scientific knowledge other than that it be such knowledge which can be applied for man's use. This demand for utility was expressed as a forceful and unequivocal view: "... it's the kind of knowledge which man can really make use of. It must have the sort of criteria that man can use it as a means to something, and this means must be practical and efficient, suited to human needs".

A more active attitude to knowledge was taken by those who felt that the criterion of scientific knowledge was that it be a thought structure, an assumption about the phenomena of reality: "... It's the kind of thing that hasn't always been self-evident. It's had to be investigated over centuries by many people before a picture has been formed, and even that has changed and will change. It's the prevailing conception of whatever is concerned." "They've set out from some assumption and then they look how things are and see how it fits in with what was thought before. It's constantly being adjusted and supplemented, and there's never any such thing as the last word of science". These students thought that such knowledge is dependent for example on the interest of researchers and their conception as to what the phenomenon they are studying involves - that is, subjective factors. Assumptions are also in their opinion dependent on the methods and concepts available to a field at any given time and on prevailing theories and conceptions of the nature of phenomena. Thus scientific knowledge is continually changing and developing.

The order of presentation of these types was selected to convey the students' attitudes to scientific knowledge because the aim of university training is to make of them users of scientific method and producers of scientific knowledge.

The students evincing the first of the types of conception described felt that scientific knowledge can be produced only by certain institutions and professionals occupying high positions in them. The knowledge they produce is difficult to master. It may perhaps be said that these students do not regard themselves, or ordinary people, as being capable of producing scientific knowledge.

Those taking a technical or methodical attitude were of the opinion that certain adopted means produce scientific knowledge. It is therefore the business of the student to acquaint himself with such means, and his own role in the production of such knowledge is a passive one.

Students who would impose criteria of truth are likewise comparatively passive in their attitude to scientific knowledge: truth is there to be found and it can be attained by mastery of certain methods and by the process of observation.

Those who apply criteria of utility or applicability have their active role in exploiting knowledge gained. They do not, on the other hand, see themselves as producers of scientific knowledge.

The most active grasp of scientific knowledge was manifested by those who felt that it required the constant construction of assumptions and testing of their validity: "... it's a kind of systematic wonder and curiosity."

4.2. Conceptions generally held, discipline-specific and changing

It was not an actual objective in the present investigation to form a representative outline of the generality of conceptions among the student body, but to describe in terms of content the development of students' thought in the course of their university training, because data on this aspect are not available. The number of students involved is too small for any representative quantitative analyses. The observations made are nevertheless some indication, and the interview results revealed them to be connected with the pedagogic approaches prevailing in the respective fields.

Among first-year students the sense of awe at the thought of scientific knowledge appeared to be shared initially by some in both disciplines involved, but to disappear during the course of studies. Reasons mentioned for this change included personal involvement in the production of scientific papers prescribed on their courses, and acquaintance with the staff in their departments.

TABLE 1. The general distribution of students' notions of scientific knowledge

Type of conception	Psychology students				Biology students			
	1st year		3rd year		1st year		3rd year	
	N	%	N	%	N	%	N	%
Reverent	3	11	-	-	1	5	-	-
Technical	7	26	5	20	9	50	5	42
Finality-oriented	10	37	10	40	3	17	1	8
Utility-oriented	3	11	1	4	1	5	-	-
Assumptive	4	15	9	36	4	23	6	50
Total	27	100	25 [1)]	100	18	100	12 [1)]	100

Among biology students the most widespread conception was the technically oriented (almost half), while among the students of psychology such a view was evinced by only one in four. One difference to be discerned between the two groups of students was that this technical conception was more diffuse in the case of biology students, being mainly a general notion of research. Among the students of psychology, again, this technically oriented conception was connected with detailed statistical methods and experimental procedures.

1) The "dropout" here was due to problems of interview: (2), summer employment (3), maternity leave (1), mental health (1) and ideological conviction (1).

The most widespread conception among the psychology students (some 40 %) was the assumption of the truth and finality of scientific knowledge. An interesting phenomenon here was that the truth criterion remained as studies progressed while there was marked frustration with their studies of statistical and experimental method, because they felt that such methods had nothing to do with an understanding of phenomena - rather they tended to diminish the possibility of mastering the laws involved in that they narrowed the scope of investigation: "Scientific results used to be the sort you could trust and easily believe. Now, when you can really see how it is, well, science must be written with a small letter". "Not all knowledge is so scientific even if it's called that, even if they say it's absolutely true and correct ... Research looks very fine and all, and fine measures are used and methods and some statistical analyses and the like. But the knowledge they get, it's about completely irrelevant things, they haven't really been able to understand them..." Such students did not appear - at least during three years of study - to feel any need to see scientific knowledge as bound to method and circumscribed in scope of validity; they were extremely critical of the staff of the department and considered the view adopted by the department as an obstacle to an understanding of phenomena. Moreover, little change could be discerned in the conceptions held by this group, and if any change had taken place they said that "... at least the teaching had nothing to do with it".

There were only a small number of students in the first year for whom scientific knowledge was a hypothesis adopted by a given era or school of thought, no more than a model or construct of reality. There were more holding such a view among the biology students. In the course of studies this notion of the hypothetical nature of scientific knowledge became more widespread.

All in all the conceptions of scientific knowledge changed more seldom among students of psychology, and if changes had taken place they attributed them to summer employment experiences,

discussion with their fellow-students and their studies of philosophy. In the case of the biology students conceptions appeared to become polarized: on the one hand there was a group with a comparatively diffuse method- oriented view and on the other those for whom knowledge was of an assumptive nature. The students of biology attributed changes in their attitude primarily to the teaching they had received and to discussions with the staff of their department.

Students in both fields were able to pinpoint changes in their conceptions (comparison between interview cards and the students' own view coincided in all cases) and to analyse the factors contributing to the change. The change whereby a student felt that his own intellectual effort was required in the production of knowledge, and the experience that he was capable of this, had a manifest effect of emancipating and motivating to study and adding to the meaningfulness of study.

5. Some pedagogical reflections

The conceptions of scientific knowledge evinced by the students interviewed bring to the fore three aspects which should be taken into account in the planning of study courses: the technicalization of the production of knowledge, the "truth" of scientific knowledge and the practice of hypothetical thinking.

In order to prevent the over-technical tendency of courses it may well be necessary to review the timing especially of statistical studies in the syllabus. It is possible that too early instruction in the methods required in scientific research misleads students into stressing the role of various techniques at the expense of hypothetical thinking in the production of knowledge.

The notion that scientific studies will lead the student to irrefutable truths and final solutions would seem likewise to call for a reconsideration of the placing of the various components in the study programme. It may be that in covering large areas of data for examinations the student loses sight of the assumptive nature and restricted validity of their content if instruction fails to bear constantly in mind the dependency of all results upon method and theory and the nature of theories as assumptions and thought constructs. A further factor in the emergence of the static conception of knowledge is surely the teaching in secondary schools and matriculation classes prior to university studies.

A problem of its own is of course the practise of hypothetical thinking during studies. The kind of practicals in which the objective is precisely the exercise of constructing assumptions and testing them out by observation are few in relation to various calculation exercises and studies concerned with "ready-made" data. Precisely these latter components, research findings and theories precailing in the field in question, might be developed as material for exercise in hypothetical approaches.

One pleasing finding in this investigation was that the conception of scientific knowledge as by nature assumptive and hypothetical appears to increase in the course of studies. But in what proportion of university students do we feel this conception should develop? With the teaching methods currently in use it would appear to emerge in less than half of the student body during the first three years of study.

REFERENCES

Alexandersson, C. 1980. Phenomenological theory and method - notes from a workshop. University of Göteborg. Institute of Education.

Giorgi, A. 1975. An application of phenomenological method in psychology. In A. Giorgi, C. Fisher & E. Murray (ed.) Duquesne studies in phenomenological psychology: vol. II. Pittsburgh: Duquesne University Press, 82-104.

Hirsjärvi, S. & Hurme, H. 1979. Teemahaastattelu.(Thematic interview). Tampere: Gaudeamus. In Finnish.

Ihde, D. 1979. Experimental phenomenology. An introduction. (2nd ed.) New York: Paragon Books.

Marton, F. 1981. Phenomenography-describing conceptions of the world around us. Introductional Science 10, 177-200.

Niemi, P. 1975. Psykologia ja analyyttisen filosofian intentionaalisuuskeskustelu. (Psychology and the debate on intentionality in analytic philosophy). Turun yliopiston psykologian laitoksen tutkimuksia 18. In Finnish.

Nuutinen, A. 1981. The development of students' scientific conceptions in higher education. Students' learning strategies and conceptions on some phenomena and basic concepts. University of Jyväskylä. Institute for Educational Research. Plan for research project.

Nuutinen, A. 1982a. Oppimisstrategioiden kuvauksessa käytettävistä menetelmistä. (On the methodology used in the description of learning strategies.) University of Jyväskylä. Institute fo Educational Research. (Manuscript). In Finnish.

Nuutinen, A. 1982b. Pedagogisesta ongelmasta korkeakoulutuksessa sekä eräitä kokemuksia sen ratkaisuyrityksistä. Esitelmä valtakunnallisessa korkeakoulupedagogiikan seminaarissa Jyväskylässä 13.-14.12.1982. (On pedagogic problems in higher education and experiences from attempts to solve the problem. Paper presented at a national symposium on pedagogics in higher education. Jyväskylä, Finland, Dec. 13.-14.1982. In Finnish.

Nuutinen, A. 1984. Ensimmäisen vuoden korkeakouluopiskelijoiden oppimisstrategioista.(Learning strategies used by first year students in universities.) University of Jyväskylä. Institute for Educational Research. (Manuscript). In Finnish.

Nuutinen, A. & Väänänen, J. 1981. Tieteellisen koulutuksen tuottamasta maailmankuvasta - eräitä esimerkkejä opiskelijoiden käsityksistä tieteenalansa tutkimuskohteena olevista ilmiöistä. (Conceptions of the world produced by higher education - some examples of students' conceptions of phenomena in their discipline.) In M. Panhelainen (ed.) Korkeakoulutus tutkimuksen kohteena. Jyväskylän yliopistossa 26.-27.5.1981 järjestetyn korkeakoulututkimuksen symposiumin artikkelit. (Higher education as a field of research. Papers presented at the Jyväskylä Symposium on Research into Higher Education in May 1981.) University of Jyväskylä. Institute for Educational Research. Bulletin 179, 95-121. English summary.

Pietarinen, J. 1982. Luennot tieteen teorian seminaarissa Jyväskylän yliopiston psykologian laitoksessa 28.-29.10.1982. (Lectures delivered in a seminar on theory of science. University of Jyväskylä. Institute of Psychology. 28.-29.10. 1982.) In Finnish.

v.Wright, G.H. 1971a. Explanation and understanding. London: Routledge & Kegan Paul.

v. Wright, G.H. 1971b. Niin kutsutusta praktisesta päättelystä. (On so called practical syllogism.) Sosiologia 3 (8), 99-110. In Finnish.

v. Wright, G.H. 1976. Determinismi ja ihmistutkimus.(Determinism and science of man. In R. Tuomela & I. Patoluoto (ed.) Yhteiskuntatieteiden filosofiset perusteet II. (Philosophical formations for social sciences II.) Hämeenlinna: Gaudeamus, 114-137. In Finnish.

Kari Niinistö

EVALUATION OF COGNITIVE STRUCTURES AND PROFUNDITY OF THE LEARNING PROCESS

ABSTRACT

The article sets out with a definition of the concepts involved in this field. The definitions are made on the basis of an interpretive paradigm. Secondly theories are discussed which are suited to an analysis of profound learning, and from which characteristics, qualities and features of profound learning are derived. Thereafter consideration turns to the evaluation of profound learning with an account of various methods of assessing the quality, depth and level of the process. Finally the paper discusses concrete interview and essay questions and sample exercises whereby cognitive structures may be evaluated. The work is based on preliminary experiences acquired in the course of a research project seeking to develop the evaluation of adult education. The project was financed by the Finnish State Training Centre.

1. Definition of concepts

By learning the present author means a reciprocal process of influence between the human individual and reality. This latter, for its part, comprises other individuals, culture, society and nature. At its utmost extent, of course, reality embraces the entire universe. Learning takes place when the individual forms notions, conceptions, constructs or models of reality - man's conceptual reality. Constructs derived from these perceptions are in turn applied in the interpretation of new experience. Learning also essentially entails among other things constant testing of conceptions and constructs in real contexts, in practice. They enable man, moreover, to influence events in reality. If these constructs prove ill-conceived, if our models do not match the reality, they must be modified - a principle known as constructive alternativism (cf. Kelly 1955 and 1976).

From reality we thus derive experiences. Of these we form various meaning areas. Although the counterparts of these experiential meanings in reality constitute a uniform entity, we may nevertheless form even isolated fields within them. Such experiential areas of reality include everyday life, work life, religion, the arts, sciences and academic disciplines.

In university teaching and training for work life one must of course beware of forming separate entities of training, science and academic subjects. Contact with practical or professional life must always be preserved. It may be claimed that universe is one and that its every component is in reality connected to every other. Hence its corresponding experiential meanings must form extensive relational systems enabling us the better to cope with reality - with everyday life, with work.

The learning process: Learning is a continuous dialectical process in which the events of yesterday have their influence ontoday's experiences, but in which our present experiences also influence our interpretation of what has passed. As a result of the process some construct, model or structure is altered, developed or renewed. This process of modification may be described in terms of assimilation and accommodation, concepts which have been employed among others by David Ausubel and Jean Piaget.

Assimilation here means the adaptation of new matters, knowledge or data to a structure already acquired (see Fig. 1). In this process the existing structure or relational system is not essentially altered; new relevant data are added to it. The cognitive structure, again, will determine what is held to be relevant and what interpretation is placed on new items.

In accommodation, on the other hand, new data "force" the existing structure to change. The change may be entailed in that some new item of knowledge will not otherwise fit in, or again it may be necessitated by a conflict between new and existing

data or an apprehension of matters in a new light. In this structural change the relations between data may also alter, and items formerly held to be pertinent may now be rejected as irrelevant when seen in a new perspective. In some cases accommodation may constitute a substantial expansion of former structures.

In practice it is often in fact difficult to distinguish between these two concepts: assimilation always also entails accommodation.

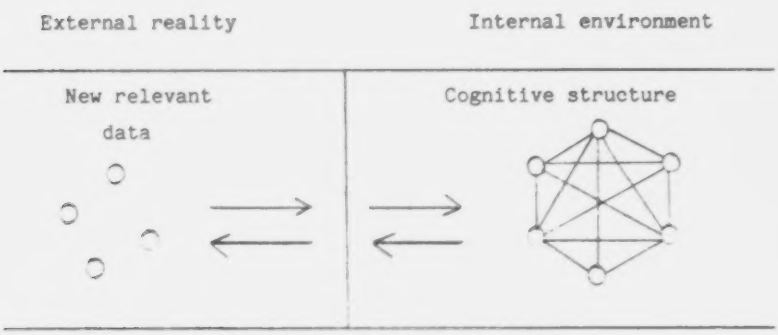


FIGURE 1. Assimilation

In addition to modification of structure the internalization of new matter is characteristic of the learning process. It may be assumed that profound understanding entails a constant processing of new acquisitions to relate and compare them with existing structures. Such activity is a purposive and personal reaction to what is already known, and here knowing and knowledge inevitably involve meanings and values.

2. Profound learning

The conception of profundity of learning, or deep learning, seeks to stress the fact that our thought processes pass constantly between the surface levels of experience and layers located deep within us. There follows an account of deep learning based partly on a previous repost by the same author (Niinistö 1984).

Surface experiences are the result of perceptions of outward reality.

FIGURE 2. An interpretive view of the mode of advance of the understanding process

Figure 2 presupposes the proces of understanding to be a constant interchange between the various levels of experience and external reality: experiences for their part influence what we perceive of reality or what construal we place upon it. It may further be assumed from the diagram that a given outward circumstance, as for example a training situation will be experienced positively or not depending not only on the situation itself but also on factors deep down in the individual which have taken shape in the history of his experience.

Deep learning also entails reconcilement of new items of knowledge with as extensive relational systems as possible. For

example, if a student is told that the Peace of Pähkinäsaari was made in the year 1323, his understanding of this item of knowledge may include relating it to such systems as:

1) a common language, without which the aural stimulus of this communication cannot have meaning,
2) a conception of the numerical system - how great a number is 1323?
3) a time perspective: how long a time has passed since 1323 - at what point does the enumeratin of years commence?
4) a historical perspective: what else took place before the year 1323, during that year and subsequently?

In short it may be said that the greater the range of perspectives available in the learning of a new matter, the more profound will be the learning. It may also be imagined that all relevant perspectives available to the learner in a given situation form a broader overall relational system upon which the level of learning depends. Deep learning is thus characterized by the extent of the learners relational systems or established structures.

There follows a summary of the features, qualities or characteristics of deep learning, based on the above theoretical considerations and the author´s earlier report (Niinistö 1984), with impulses from the works of Biggs & Collis (1982), Chamberlin (1969 and 1974) and Marton (e.g. 1982).

1. An essential but not sufficient condition for deep learning is an extensive field of knowledge (i.e. relevant, essential data).

2. Acquired data (knowledge and concepts) mus form a system, structure, scheme, horizon, field, frame of reference or perspective in which component items stand in relation to each other and to the whole. Different theoretical approaches employ divergent terms in describing this overall relational system.

The relational system should be as comprehensive as possible to accommodate ever new essential data. Here it is not necessary to learn new acquisitions by heart; they are understood and learned by merit of relations of a higher level.

3. The relational system must be flexible. This is possible provided it is sufficiently abstract. Abstraction and the derivation of general principles make possible "sensible" action in varying and hitherto unprecedented concrete situations. What is essential is thus elevation above the concrete. On the other hand excessively rigid universal "laws" as part of the cognitive structure can hamper flexible activity and consideration of the demands a particular situation imposes.

4. The ideal relational system is a continually evolving inductive-deductive alternation, which in practice means that the individual derives from his own experience and from what he learns a set of abstract principles from which again he deduces ever new applications (see Fig. 3).

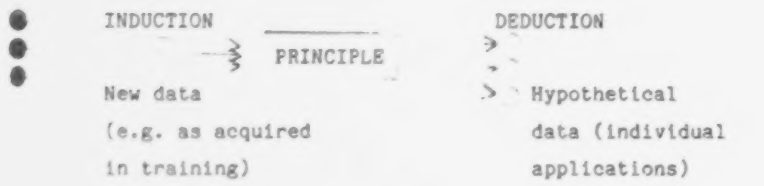


FIGURE 3. The inductive-deductive system

Essential to the ideal cognitive structure is individuality or the personal stamp: each of us should also be capable at least in some measure of deriving general principles and testing them in new, unfamiliar situations.

5. Deep learning is characterized by reflectivity - items of knowledge may be appraised and assessed from a variety of view-

points. The perception and identification of exceptions and special cases evidences a flexible and expansive mode of thinking, in which conclusions and general principles are not excessively rigid. This same liberality of scope involves further the consideration of matters from the standpoint of other people: it is not always easy to put oneself in another man's place. Here, it is true, it may be of even greater importance to fit knowledge acquired - for example what is taught in the course of professional training - to one's own range of experience even when it has been presented from the standpoint of another, so that the new items and examples are not necessarily applicable as such to one's own task.

6. Deep learning is further characterized by a critical assessment of the significance of new and already acquired items of knowledge. Deep knowledge is not "pure", it involves values: there is useful knowledge, harmful knowledge, important and less important, good and evil knowledge. In this respect, then profound thought does not resemble the neutral data processing of a computer.

The apprehension of meanings may be existential, or it may be common human understanding. Existential understanding consists in awareness of what is good and bad, important and not so important to oneself (yourself); common understanding, again, entails an expansion of experience to apply to people in general or to mankind as a whole where the criterion of judgement is the usefulness or meaningfulness of acquisitions to human beings.

7. Prerequisite to deep learnings is the learner's own active and unflagging participation in the process: thought induction, even knowing constitute activity (processing), in addition to which come the application of items learned and their testing in practice.

The continuity called for implies that understanding is a dynamic, dialectical process. The events of today help us to see

yesterday's in a new light, and experiential history (the past) is a prerequisite for our understanding of what has yet to come.

8. Deep learning further involves simplifications (the search for general principles), analogies (the perception of common features in apparently very different situations) and differentiation (the perception of differences and distinctive features in situations apparently similar).

9. Prerequisite to deep learning is intentionality - the desire and the will to learn. Here the learner's own conscious, active aspiration and effort is brought out - learning is not a matter of the passive absorption of knowledge.

10. Another prerequisite is perhaps the learner's own conception of learning. If this stresses the significance of facts, learning by heart, emphasis on detail, the apperception of items as isolated entities, a passive approach to learning overall. the result will not be deep learning.

11. Learning at its best is conscious activity. This entails the acquisition of metacognitive entities. For example the consideration and evaluation of one's own conception of learning constitutes metacognitive activity, as does consideration of what one regards as essential or meaningful (and why) and of the way meaningful phenomena are related to each other. Such apperceptions involve a higher level of consciousness or awareness.

Deep learning may be succintly defined as follows: in deep learning the learner consciously focuses his attention on the essential - since reality contains an infinity of "facts" one cannot hope to learn them all. Secondly, he brings newly acquired items of knowledge into relationship with each other and with the overall system of relationships he already possesses. Thirdly, he applies, tries out, tests and modifies what he has learnt in practice, that is, in situations in which new items reciprocate with the familiar. Thus he may also exert an in-

fluence upon the world of the practical (reality).

The foregoing account leaves the epistemological problems of knowing and understanding somewhat scant attention. It is obviously important that our picture of outward reality should approximate as closely as possible to that reality. The present article sets out with the assumption that the constructs and models we learn and adopt are tried out in a constant interchange with reality. that is, in practice and to a more limited extent in work life. This takes place both in the life of every individual and in the history of man: we may supposed that in the course of time only those models which do correspond to the reality or such as prove valid in application will survive. Situations of conflict or situations in which experienced reality and previous cognitive constructs prove incompatible are fruitful for the learning process in that precisely here one may imagine the pressures to accommodation will make themselves felt. On the other hand it may be assumed that there will always be alternative models of reality, because in reality we do indeed cope in more than one way, even if naturally certain limits obtain.

3. Evaluation of deep learning

The conception of learning described implies that an area of reality - some discipline or work task - may be outlined and structured at least to some extent in different ways on the same level of profundity. Hence the most profitable mode of knowledge acquisition proper would be a relatively unstructured approach such as that entailed in essay questions, interview, participative observation or the use of natural or quasi-natural (simulated) choice and problem situations and so on.

The unstructued aspect is essential here if the objective is an assessment of the structures the learner himself has formed of a

given area of reality. If the teacher, for example in multi-choice tasks, himself structures the area in advance, the learner has only to recognize the teacher's conception of the true structure. The outcome is that those students who have structured the phenomenon in the same way as their teacher will gain good marks, while in fact this same area of focus might be structured in a variety of ways with an equal degree of profundity. For example the "new" mathematics versus the "old", in spite of the traditional view of mathematics as a science in which there is only one (logical) solution (truth) to each problem.

A further consequence of the conception adopted here is that evaluation should take place in varied conditions, because the successful application of acquired knowledge in new, unpredictable or even conflicting situations is of all things evidence of highly evolved structuring activity. In this respect the pen-and-paper test held in the lecture-room is extremely inappropriate in that there is no way of being sure that the learner is capable of applying his acquisitions in an infinite variety of practical situations.

There is, moreover, reason to assume that self-conceptions exert an influence, over and above level of learning, in certain problem situations. Self-cognition essential to success involves self-confidence. belief in one's own potential and the desire actively to influence the solution sought - in other words, experience of oneself as an intentioning SUBJECT in practical situations of choice promotes a high level of cognitive processing and at the same time will serve to sustain concrete activity even in difficult circumstances. The alternative is self-perception as an object unable to cope with such situations. Here the outcome may be regression, a state in which the individual is incapable of functioning even on (cognitive) level at which he has already in "ideal", conflict-free and clearcut lecture-room situations been able to cope.

If it is nevertheless desired to employ the essay question approach, the problem to be solved may be so conceived as to involve conflicting or ambivalent elements. The task may be for example an invented or simulated law-suit, a labour dispute, the application of labour contract or settlement of some disturbance on work location. These are frequently problems to which there is no one categorically correct answer and the learner's cognitice grasp will emerge for example in the number of allied aspects he perceives to the problem, how broadly he approaches it (can he place himself in the position of both parties), how logical are his conclusions, where he lays emphasis (what relevant facts does he see as essential to a solution, what again less vital), how he justifies his choice and so on.

In what follows we may consider a number of concrete tasks and questions for interview or essay and analyse them in the light of the theories and views presented.

The purpose is to introduce only such tasks as will afford the possibility of assessing the depth of cognitive learning achieved.

1. Tell all you know of the subject taught (learned). To what cognitive sub-areas can you mention to be in that field?

This will give the assessor an idea of amount of relevant knowledge acquired, as also of the amount of inessential, even irrelevant data accruing.

2. Give an account of the way the matters taught (e.g. during some cource consisting of a number of "separate" modules) are related to each other.

This enables the assessor to evaluate the learner's ability to bring facts, concepts and circumstances into mutual relationship. Point 1 may also serve to reveal capacity to structure totalities.

3. Can you derive some general principle from what you have learnt? Invent your own examples of application.

Here the level of inductive - deductive thought can be assessed.

4. What good and bad sides can you see to what you have learnt? What was good or bad in the work you have read? How far do you share this view and where do you disagree?

The skill of the learner in alternating perspective and his breadth of vision and flexibility can be evaluated, together with the degree to which the newly acquired items have been integrated in the learner's own scheme.

5. Give a brief account of the content of the lecture (book), its message or its theme. How far do you agree/disagree - give your reasons. What is most important in this matter (phenomenon, book etc.)? What might have been given more attention, what less? What was it about (e.g. the content of the book). What is your conception of the usefulness, importance and so on of this matter to mankind - and to yourself? Had the lecturer anything essential to say - if so, what? Put the core of the matter into a few sentences.

Such a task makes it possible to asses the degree to which the learner can distinguish the essential from the trivial, as well as the values his perceptions reveal.

6. Did your conceptions of the phenomenon alted in the course of (as a result of) the lecture? If so, in what way?

Here the dynamic and flexible aspects of the learner's thinking can be brought out.

7. Make a comparison of the matters, phenomena (works, lectures, views, methods, modes of work, theories, paradigms) you have become acquainted with. What have they in common, and in what

respects do they differ?

The learner's capacity for generalization, for the perception of analogies and distinctions, amy here be assessed.

8. What is learning? What is essential in learning? How did you go about learning this matter (the content of this work)?

This will reveal the learner's conception of learning underlying his own learning activities. If his conception is such as will hamper deep learning the instructor may discuss with him the various possible modes of learning and their advantages and drawbacks.

9. Why did you join this course? What do you expect of it? Why did you choose this line? How well in your own view do you command this particular area (the content of this work)? What do you feel you lack in this respect? In what respect do you wish to develop?

Here the realism of the learner's self-image can be evaluated, the level of his self-awareness and the presence in his consciousnes of metacognitive entities whereby he can understand and explain his own action and influence it.

In addition to the above mode of questioning there are a variety of other means of assessing the learner's level of cognitive processing:

1. Students may be given reading material to assimilate, with permission to underline, number and annotate as they please. Later this material is collected in and evaluated, attention being paid to perception of essentials as revealed in underlining, to the amount of application, example and analogy noted in the margin, to structuring of the content as evinced in numbering, classification etc., and to the critical comments in which the learner reveals his independent capacity for evalua-

tion.

2. Likewise students' lecture notes may be collected in and evaluated on the same principle as above. In this manner, however, the intensity of the students' concentration on the subject and their modes of processing knowledge can better be assessed.

3. Tasks may also be assigned to groups: here they should be of sufficiently varied content or some degree of ambivalence, for if there is but one correct solution the mode of processing will often not emerge. In such group work attention may be focused for example on the number of relevant aspects brought out, stress laid on the various relevant facts (valuation), the logic of conclusions reached and in general the structuring of the problem area to be tackled.

4. It is also possible to employ two or more groups assigned the same complex problem. Each group approaches the problem independently and thereafter puts its solution, with its justification to the others. Eventually the groups together discuss the pros and cons of each proposal. In this way it is possible to expand the learners' perspectives and each individual's cognitive structures.

5. (Participative) observation affords an excellent means of assessing students' activity in different problem situations. This provides a basis for conclusions not only as to the cognitive structures associated with the assignment or problem but also of the learners' self-images, which, as noted, exert their influence on activity especially in the natural (real) choice situations in life.

Frequently, however, it is not possible to employ completely natural situations in evaluating learning. Here various simulations must suffice, and there are numerous methods available. For example it is nowadays possible to simulate situations (say,

flying) with the aid of the computer. At the other extreme are the various modes of simulating social situations, among them role-playing.

6. The same problem, assignment or question may be set again after a lapse of time. This allows of an appraisal of the meaningfulness of items taught and/or learnt, for only what is meaningful among data presented and acquired will be remembered in that it can be integrated into already existing frameworks, while what is learnt by heart and what remains isolated and meaningless is generally soon forgotten.

The foregoing article describes various means by which one can presumably assess the profundity of learning. The account is in some measure hypothetical: the proposed methods have been derived by theoretical approach and their testing in practical application is still under way. A project has been in progress in the State Training Centre since the beginning of 1983, seeking to develop the evaluation of adult educational work: the writer has acted as responsible researcher and director of the undertaking. The methods set out in the article are based on experiences and results obtained in the project so far, and only such modes of evaluation have been discussed here which - at least in preliminary analysis - have proved to be of use in application.

REFERENCES

Biggs, J. & Collis, K. 1982. Evaluating the quality of learning: the SOLO taxonomy: Structure of the observed learning outcome. New York: Academic Press.

Chamberlin, G. 1969. Towards a phenomenology of education. Philadelphia: The Westminster Press.

Chamberlin, G. 1974. Phenomenological methodology and understanding education. In D. Denton (ed.) Existentialism and phenomenology in education. New York: Teachers College Press, 119-138.

Kelly, G. 1955. The psychology of personal constructs. New York: Norton.

Kelly, G. 1976. Constructive alternativism. In J. Wolfson, (ed.) Personality and learning 2. London: Hodder and Stoughton, 34-47.

Marton, F. 1982. Towards a phenomenography of learning. I. Integrating experiential aspects. Department of Education, University of Göteborg 6.

Niemistö, K. 1984. Aikuiskoulutus ja sen evaluointi: uusia sovellutuksia lähinnä tulkinnallisesta näkökulmasta. (Adult education and it's evaluation: new applications mainly from an interpretative point of view.) Valtion koulutuskeskus. Julkaisusarja B 23. Helsinki. In Finnish.

PART IV

MATTI PARJANEN

EXTENSION STUDIES UNDER PRESSURE FROM WORK LIFE, TRAINING AND MYTHS

Matti Parjanen

EXTENSION STUDIES UNDER PRESSURE FROM WORK LIFE, TRAINING AND MYTHS

ABSTRACT

This article sets out from the assumption that, in the process of its enormous expansion, supplementary higher education has begun to make more use of myths than of scientific research findings. Society has perceived that precisely this sphere of education affords opportunities to reinforce those areas of culture which at a given moment are held to be important and useful. As research in education - and this applies especially in the field of adult education - has as yet made no great advances, supplementary training activity has been forced to operate largely on the basis of the myths prevailing in work life. Existing as it does in the no-man's-land between the school system and the world of work, this entire mode of education has been clearly inclined towards the latter pole, even to the point of partially mimicking the market opening model in the business sector. Extension training activity has been found to be extremely responsive, that is, it strives with all expedition to meet whatever needs the community evinces at any given point in time. Examples of myths conspicuously involved in this activity are money, time, progression, the demand for conformity, equality, even training itself. The article also contains an account of an attempt to set up a qualitative data bank covering such myths and values, in the belief that this may prove of use to the society's decision-makers. The scientific study of structures latent in the sphere of supplementary education is no easy undertaking. The present article gives a brief account of qualitative approaches which might serve to reveal these elements. The methods envisaged are all associated above all with the study of language and social meanings.

1. Introduction

There are in Finland at the moment over 80 000 university students, that is, some 17 % of the age group in question. Since the intensive expansion of the universities in the sixties and seventies, increasing interest has been shown in the notion of lifelong education, whereby systematic study ought to continue after actual basic training. Supplementary higher education

comprises training of persons who are already in the professions or returning to a profession and who need to maintain, extend or promote their professional competence and develop their possibilities of participating in the life of the society. In Finland there are institutes of supplementary education both in the universities (all of which are Stateowned) and outside them, these latter including State establishments or institutions enjoying State aid, some owned by non-profit organizations and some operating on a business basis.

One reason for the interest in supplementary higher education has been the demand in sectors employing academically trained personnel for the latest available scientific data. At the same time the principle of lifelong education has come to be accepted as an educational ideology, and avant-garde representatives have actually insisted on realization of it in Finland's universities, which have traditionally been markedly exclusive in their student recruiting policies. Advanced-level extension studies in this country have been characterized in recent years by their close association with two modes of education, namely open university instruction and higher re-employment training. Some idea of the scale of this activity may be gained from the latest statistics (Vesikansa 1983), which reveal that in 1982 the universities organized about 400 short (one week or less) extension training courses, attended by some 10 000 students. On the other hand, supplementary education programmes of longer duration have as yet been few in number. They usually involve 200-300 participants. In the same year the universities arranged about 60 re-employment training courses, attended by over 1 000 unemployed persons with academic degrees. Finance for these activities comes from a wide variety of sources; precise amounts are difficult to state, but in 1983 the costs of supplementary higher education were estimated at 80 million FIM (13 million USD).

The Ministry of Education has planned a marked expansion of supplementary higher education by the end of the present decade

- to a point, in fact, where representatives of the traditionalist schools of thought clearly prevailing in the universities have united in opposition to such a development. When the present 150 000 graduated students increase by the end of this decade to 200 000, the State intends to provide for each one of them a course of at least one week's duration every five years. At the same time the number of courses offered will be increased five-fold. Such a development means that in 1990 one tenth of the instruction given in Finnish universities will be in the sphere of extension training.

After initial doubts, advanced supplementary training activity gained general acceptance in State educational policy-making circles, with the result that efforts were made to establish norms for its operation. The problem in this was, however, and remains, an often exclusive reference to the immediate needs of practical life as basis to this activity. In the long run extension training operating without any particular theoretical foundation will not be capable of developing cooperation between the scientific research work of the universities and the practical sphere of work life - and the ensuing gulf between the two cannot but be to the detriment of both. There are grounds for fear that the possibilities of the universities to participate in higher-level supplementary training work will be increasingly restricted.

2. Myths as latent cultural structures

Ever more frequently of late sociologists have been induced to analyse certain social phenomena in the light of their relation to so-called social mythology. The myth theory has been especially popular in studies of woman's role in society. Likewise there have been attempts to apply it in explanation of the drinking habits of the Finnish male (Falk & Sulkunen 1980). By

myth one generally means a sacred tradition, an exemplary model. Although the myth is a fiction, an illusion, it promotes an understanding of contemporary phenomena. The purpose of the myth is to appeal to our most powerful inclinations. The notion of myth is outstandingly a sociological concept, because the myth has always a social function. Myths are collective social phenomena arising from man's subconscious. Their function is to reinforce traditions, to imbue them with value and esteem. Thus the myth expresses and crystallizes the beliefs of the community and embodies practical rules for its members' behaviour. Of investigators of this phenomenon the best-known are É. Durkheim, B. Malinovski, C. Lévi-Strauss, A.J. Greimas and M. Eliade. Particularly the French and Russian semiologists have given impulse to studies of the multiple meaning stratification in culture and language (e.g. Lucid 1977, Lévi-Strauss 1978, Durkheim 1980).

No unambiguous definition of the myth such as all can accept has as yet been forthcoming. Researchers in literature, popular culture and cultural anthropology have each their own conception. On the other hand, Luostarinen (1982, 284) has in fact noted that the extraordinary range of practical applications of the term myth is essential to its viability. A concept rich in significance will not be impoverished for all attempts to nail it down. In the present context the myth is given a particularly broad interpretation, emphasis falling rather on its latent social and cultural bearings than its affinities to folk tales. In any case what is essential in this theory is the explanation proposed by structural anthropologists whereby myths embody two distinct modes of language: that of conscious and that of unconscious meaning. These two meaning strata have often been seen to be associated with the power structures of society. By means of advertising or the information media those in power have been able to create stereotyped myths which those under their control assume to be permanent rules of behaviour. Here the myths are so well concealed that even their scientific investigation has proved difficult. The task is easier in the

case of the media of popular culture, light fiction, films, TV programmes and the like. Although in recent years research in the field of myths has become particularly popular among investigators tired of the hard methodology of the social sciences, this line too is based on the Durkheim tradition. It is thus not a matter of the ethnocentric rationalism of intellectuals, rather the study of myths "fascinates precisely with its notion that beneath the thin crust of even the most banal popular entertainment there is more than nonsense" (Sulkunen 1983, 11).

As the network of myths prevailing in a culture serves to create a general picture of what a given phase in that culture wishes to emphasize, one may perceive in the present enormously expansive institution of supplementary higher education certain phenomena which are open to explanation by the theory of myths. The institutes providing this training are not in general aware of the influence and accountability this training exerts. Thus the supply of training to those already placed in work life does indeed operate more on a basis of myth than with scientifically collected and studies data.

The extension training institution seeks to be responsive, that is, it seeks to satisfy as quickly as possibly whatever needs the society expresses at any given time. Precisely this hypersensitivity involves a certain capriciousness in this field, which renders the reciprocal influence of training and work life unstable. A broader issue of educational policy is involved when for example business enterprises, perplexed by the diverse supply of training from without, more and more often in fact resort to facilities within their own firms, this naturally taking place on the employer's own terms.

By means of supplementary training, then, society seeks to reinforce those myths which are held important at a given point in time. This activity, in conjunction with the business sector, is laying the foundations of a dual language whose unconscious component has as yet not been analysed. Its conscious manifesta-

tion, on the other hand, is readily clothed in scientific guise.

3. A Thesaurus of myths

In spite of their timeless appeal myths are bound to time and place in as much as each age brings certain beliefs to the fore and represses others. With a view to facilitating analysis of the myths of our own time, Broms et al. (1983) planned the establishment of a qualitative data base containing contemporary value constellations. Such a store of information should cover our subconscious wishes, beliefs, values and fears. Hitherto their pilot study comprised a limited project concentrating specifically on the computerized registration of values embodied in certain periodicals. Their original intention was to set up a vocabulary or thesaurus of the best-known myths. The basic idea of this myth bank derived form the definition of the myth by Broms and Gahmberg (1982). According to them myths are values clothed in pictures. For example "good" and "bad" as values are often too abstract to say much to us, but if given a pictorial dimension - as in the legend of St George and the Dragon - their concreteness awakens interest. A myth bank of some 50 separate references was formed, based on Northrop Frye's "The Anatomy of Criticism" (1955). By means of these key words it was sought to categorize five different weekly publications in the business and political sectors (The Economist, Business Week, Le Monde, Time and Talouselämä). As the project advanced to the phase of classification the "data bankers" percived that all myths in these publications were in fact associated with personalities. Hence this experimental data base eventually concentrated on an analysis of the idols of political and financial life.

The authors based their classification on semiotics, the theory of symbols. They referred to the theory of Propp (1929) and Greimas (1966) according to which every situation in folk myths

can be seen as a drama involving always the same actants. In Greimas' elaboration of this theory every social phenomenon assumes the form of a myth if the following actants are present in it:

1. sender
2. receiver
3. subject
4. object
5. helper
6. adversary

Broms et al. in their experiment showed that journalistic presentations of the leaders of political and business life evince precisely these mythical actants. Also in general it is fairly easy to demonstrate behind all the pragmatic economics the presence in the business life of a market economy of all manner of mythical elements ("organizational mythology") associated with the image of the firm (cf. Broms & Gahmberg 1983).

The authors seek to expand their data bank to a point where it would form a representative cross-section (e.g. some 2 000 items) of the idols of our own time and "... it would be a good and useful tool for leaders, journalists and political decision makers. It would be developed into an encyclopaedia of idols in the present time " (Broms et al. 1983, 9).

The establishment of such a new type of data base as that described is far from easy by reason of its qualitative nature. Indeed some experts are manifestly suspicious of such an enterprise. Nevertheless the Japanese are at present engaged on the construction of a five-generation computer capable of dealing associatively with data in such a way that values and fancies can be brought into parallel with everyday life. Such a reservoir of information would open up an approach to the question how far the everyday realization of supplementary higher education policies is grounded in the myths prevailing in society at

any given juncture. Such an analysis could for its own part help to rid this field of activity of its proneness to adopt marketing attitudes concerned only with the short-term exploitation of mythical needs.

4. Myths in training

Training is one of the most important social institutions we have. It is also in certain respects involved with myths without the responsible educational authorities or the trainees ever having called them in question. This would induce us to conclude that myths are something which ought to be brought out into the open. The myths latent among us are "deceptive and dangerous". Despite the enormous development that has taken place in society, people today have at least as many mythical beliefs as our forefathers in the Middle Ages. We laught at the notion of a flat earth and at the medieval myths surrounding sickness, yet in our time exactly the same kind of unfounded and disproven conceptions abound. Today just as hundreds of years ago man is beset by the limitations of myth.

Combs in his work "Myths in Education" (1979), lists dozens of myths associated with basic schooling in America which, he claims, hamper the development of the human being. According to him these myths are characterized by the following five deceptive features:

1. They are generally held
2. They are often expressed as dichotomies
3. They sometimes contain a germ of truth
4. They justify behaviour
5. They often become institutionalized.

(Combs 1979, 2)

The myths manifested in basic schooling are often associated with teaching, learning, teachers, pupils, conformity of behaviour, religion, sport, the relation between school and parents and that between individual schools and the central administration, punishment, evaluation, intelligence etc., in other words with more or less everything that from decade to decade has filled the Letters to the Editor columns in the Press. In the case of extension training, on the other hand, the myths are associated with work life rather than with the school system. It may thus be said that in the no-man's-land between the schools and the world of work extension training is more inclined to grasp at the myths prevailing in the latter sphere.

The association of this higher educational sector with work life in a capitalistic society naturally binds it solely to the marketing mechanisms of the business world. (The following section contains a more detailed account of the relevance of the market opening theory to supplementary higher education). All in all, extension training programmes are seen frequently to exploit such myths as are associated with money, seeking for example to convince the "consumer" that "an expensive course is bound to be a good one". An aura of mythical prestige is created about cource activity by means of higher fees, impressive brochures, expensive hotel locations and highly paid bestseller lecturers.

Another myth is that involved in time. The entire economic system of the industrialized West is based on the kind of efficiency which is usually measured as a function of time. It is clear that most extension training establishments in the business sector take for granted the value of maximal use of time available. Manuals have even been published for the instruction of managers or fathers and mothers in the right employment of every minute of their day (cf. Johnson & Blonchard 1977). From this time myth spring countless subsidiary myths marked by this Western conception of time. Among these is the notion of continuous fruitful progression. Skilful trainers in the field of

extension studies present earlier truths or myths in new packages and thus contrive to give trainees a false picture of progress.

One prevailing myth embodies the concept of the information society, information here usually (and perhaps deliberately) being confused with knowledge. It is clear that as a result of intensive training our society is passing from the phase of commodity fetishism to info-fetishism.

Sociologists have long sought to eliminate the ever-resilient conception of the positivy of uniformity. Particularly in a structurally uniform country such as Finland this tendency is manifest. For example managers in the business world are expected to evince not only the same behaviour but even the same appearance ("even their handshakes are adjusted to the same kilopond reading"). The conflicting nature of training is evidenced in the fact that whereas in the world of business bold acceptance of financial risks is esteemed, research has shown that good basic training indeed reduces willingness to take such risks.

Particularly in Scandinavia over the past twenty years the myth of equality has been to the fore. Especially this has been reflected in research into training and in decisions on training policy. It has been surprisingly easy to maintain this positive concept without the latent structures of social and cultural life ever having been properly investigated. During the present decade many sociological studies have revealed how in fact our society has after all made little palpable progress in the direction of equality. This is especially the case in the sphere of training.

In conclusion it may be noted that even training itself is often a myth. People are fed with the notion that only training can make them happy. In other words those who have attended extension training courses must be happier than those who have not.

This implies that happiness is seen as something useful. As economic conditions improve in absolute terms, it becomes necessary by dint of training somehow to scrape together yet more new ways and means of increasing our happiness. At the moment this end is being sought by means of myths associated on the one hand with hard, incredibly complicated technology (e.g. computer-based instruction, cable television, video devices and so forth), or on the other with modes of training emphasizing the softness and individual inward-oriented aspects of mutual human intercourse. At all events the myth is now ubiquitous that man cannot cope with this world without continuous training and guidance. People are even being trained to die efficiently, happily and with optimal application of their time.

5. The market opening theory in supplementary higher education

By way of illustrating the close relationship between supplementary training programmes and the mechanisms of the market economy we may conclude with a brief account of one of the consistent parallels to be perceived, namely that with the market opening theory. By market opening business scientists normally mean an area on the markets where greater demand prevails than supply. In what follows we consider five situations in business life which may give rise to a market opening. In each context we point out how the same phenomenon emerges in the sphere of extension training.

1. A powertul firm can by development of its products and especially by dint of good salesmanship force open a market for some new product.

Extension training: Despite the plentiful supply of training for business life, some training establishments with powerful financial backing may still succeed in sell-

ing on this crowded market. This does however require markedly increased financial resources, acquired for example by affiliation to some flourishing business or in that such a business itself undertakes training activity as a new sector.

2. First a need is created, the the product is manufactured which satisfies it.

Extension training: In this context it is not difficult to find a counterpart. For example by the creation and active marketing of software values organizations and individuals are induced to feel a need for training in order to satisfy this very need.

3. Products give rise to new needs and new sub-products (e.g. the hula-hula hoop).

Extension training: Once people have been enticed to participate in extension training events it is of course easier to induce in them a demand for either continued or parallel training. This sequence may proceed so far that we may with Etzioni (1964) speak of the displacement, succession, multiplication and expansion of goals. It is quite possible that in the course of time such activity will lead to "hula-hula training".

4. Often an opening on the markets is left by a firm which has either gone bankrupt or discontinued some line of production which has proved unprofitable.

Extension training: Although supplementary higher education in Finland is only in its early stages, examples from elsewhere in the world would indicate that even on this front there may be cases of outright bankruptcy among training organizations or discontinuation of activity for

other reasons. Quite clearly the mechanisms in this training field resemble the laws of business life.

5. Amidst the serried ranks of mass production there often remain gaps, special needs which appropriate sales techniques can work up into rewarding openings (e.g. "clothes for big girls").

Extension training: When overcrowding on the extension training market begins to make itself felt (as yet not in Finland), it is clear that training organizations will set about studying special needs in order to channel training into the openings they afford (e.g. in the U.S.A. instruction in reading and writing skills for academics).

Clearly the market opening theory may well be applied to the sphere of supplementary higher education either today or at some future point as competition becomes fiercer on this market.

6. Methodology of research into myths in supplementary education

This chapter comprises an account of certain methodological approaches which might be of use in revealing latent structures in supplementary education. Chief attention is directed to the so-called interpretative paradigm, as structures underlying human cognitive processes are not likely to be accessible to a quantitative approach.

Bernstein (1971, 1973 and 1975) sought to combine social and educational structures in the analysis of the training process. In face of criticism he endeavours to explain the role of language in this process. Bernstein has also given scientific impulse to macro-researchers concerned with the problems of public power, because he bases his theory on the notion of

society's desire to exercise power and control by selective dissemination of knowledge via education. Microresearchers have also been interested (or ought to be) in Bernstein's paradigms in that prime place in his educational process model is occupied by the curriculum. Alongside manifest pedagogics (rules and criteria are explicit) he speaks of an "invisible pedagogics". It goes without saying that of all educational fields precisely supplementary education, by reason of its youth, its unintegrated administration and its close connections with work life, will be found to involve such an invisible stratum. The analysis of these elements, however, is extremely laborious.

Finnish researchers have recently become acquainted with the work of Michael Young, Knowledge and Control (1971), which has prompted lively debate in the United Kingdom. The work is concerned with the relationship between the content of school syllabuses and the exercise of societal power. It sets out from the assumption that those in power will always seek to define what is knowledge and what is not, and what groups are entitled to acquire this knowledge.

Little research has been done thus far in the field of supplemetary education as to society's goals in selecting, classifying and controlling and the invisible pedagogics. One means of obtaining data on this aspect would be to study whether the function of the language employed in supplementary education is in fact exclusive and whether it creates distance between various groups. As in the study of invisible pedagogics the methods of didactic research would be appropriate for the purpose; the basic approach must nevertheless be sociolinguistic.

According to neo-Marxist conflict theory the educational system has a decisive role in the reproduction of the division of labour in capitalist society in that this system propagates conditions of social inequality. Among the most controversial representatives of this view are the American researchers Bowles

and Gintis (1976), who constructed a theory of correspondence whereby the social relationships of school and work life are analogical.

Collins (1971) for his part sees education to have as one of its alternative functions that of a moulder of behavioural styles, a provider of mere technical qualifications. Likewise Bourdieu and Passeron (1977) see the educational system as of great significance in the process of social differentiation in its functions as a cultural factor and an instrument of symbolical power. According to Bourdieu the class structure of society is based on three "capital assets": economic, cultural and social. The latter involves the capacity for behaviour in different situations. At the same time it includes "connections" in life. All three forms of capital are symbolical: language, information and relationships.

It may be that the above concepts - Bernstein's invisible pedagogics, Young's notion of a connection between the content of schooling and public power, Collins' competing status groups, Bowles' and Gintis' theory of correspondence and the cumulation of cultural capital envisaged by Bourdieu - comprise for modern educational sociology a set of concepts whose operationalization would merit greater attention than educationists and sociologists have hitherto devoted to it. From the methodological standpoint, of course, the analysis of such phenomena as these is far from easy.

One of the basic strategies in soft-approach method is to study how people really live. The expression must strike one as ironic in that the social and behavioural sciences have throughout their existence sought to do precisely this. The fact that even the 1980s have discovered a "new" method of studying man as he really is must be a cynical dig in the side of methodological empiricism and the quantitative research approach. These, after all, have ever sought to give an objective picture of human life. There has nonetheless been disappointment in them of

late: one main objection has been that the researcher should not explain man's life directly by changes in the structure of the economy and society; there is an intermediate level comprising culture, perspective and subjectivity. In qualitative methods what may be called an ordinary understanding may be arrived at in many ways. Naive anthropological discovery involves describing what an individual or a society evince without stimulus. Such an approach may be adopted where the object of study is totally unfamiliar and its internal semantic system is not known. Finnish supplementary education may well fulfil these criteria. The research done in general in this field is scant to date, to say nothing of work on its language.

The humanistic, antinaturalistic view of man as against the mechanistic conception has lately drawn the attention of researchers to the analysis of social meanings. This implies a study of the significance things assume in man's life. The social sphere is customarily thought of as the business of social scientists, but in the case of social meanings it would seem that an elucidation will be forthcoming rather from experts in general linguistics and semiology. Paradoxical as it may seem, no common language has been evolved as yet between the social and behavioural sciences on the one hand and linguistics on the other - indeed it is obvious that no attempt has been made to find one. And yet all those who are concerned to study human language have a common base in philosophy, for example the thought of Wittgenstein and Habermas regarding the close relationship between language and social reality.

Social meanings and the meanings of words may sometimes overlap, but may sometimes be far removed one from the other. If for example participants in supplementary education are asked what "managership" means to them, it is not clear whether their answers refer to the pure word or the activity it designates. In this case it is likewise not clear what the researcher is analysing. Semiotics in any case affords excellent and illuminating means of studying the phenomenon of social meaning.

The social quality of language is also manifested in life styles and group life. Just as teenagers define their lives in terms of clothing style, slang, music and so on, the same cohesion may be discerned among representatives of business life. Their language, dress, conceptions of art and so on are equally subject to the sanctions of their group. We do not know how far the training provided in the Schools of Economics or in supplementary educational centres is a contributing factor in this.

How then shall we embark on a study of the social meanings involved in supplementary education? The human relations school of thought has adopted the basic ideology of work life which since the 1930s has governed the management of relations in the world of work and in the further training of personnel. Since trainers would not willingly have it stressed that their doctrines are half a century old, it has been sought after the manner of the marketeer to adapt them - with little alteration - to the patterns of modern society. In order to arrive at a methodology which will reveal this process of dishing up old doctrines in new guise, a study of language affords one approach. Comparison of the expressions and contents of language may serve to bring out how in reality the content of the old corresponds precisely to the novel version. This would nevertheless still constitute a study of the subjectivity of social meanings, not a comparison of concepts and reality (which in fact comprises another important field of inquiry).

It has been implied throughout this article that supplementary education frequently takes forms which it is sought to sustain organizationally, didactically and ideologically by artificial means. A useful mode of approach to this phenomenon is offered by the commodity aesthetics theory (Warenästhetik) of Haug (1982) - albeit calling for certain extra associations. The basic concept here is the aesthetical promise-of-use value (Gebrauchswertversprechen) ,the future realization (through purchase) of a given value. The theory sets out from an analysis of the meanings conveyed by the objective appearance of goods,

in whose context Haug adopts the spirit of the old saying: "All that glitters is not gold" ("Aussen hui, innen pfui"). In the world of everyday this implies advertising, buyer, seller and consumer. Without embarking on a detailed application of the complex conceptual framework of Haug's commodity aesthetics it may suffice to note that such an approach affords appropriate analogies to the "promise of use values" of the supplementary educational organizations. For example the "sense" of the training package is to the trainer desirability, saleability, while to the prospectice trainee it is applicability, usefulness. The "seller" here seeks "key stimuli" which will prompt in the "buyer" such behavioural patterns as will increase the meaningfulness and the reproducibility of the commodity on offer, in this case training.

In the terms of commodity aesthetics it may be asked whether a person participates in a supplementary educational event for its true use value or for its promise-of-use value. Since for example a business manager seeks a desired economic feedback from the time he puts into trainig, training in management often produces a distinct "manifest surface" with an ostensibly concrete form. The "commodity" is often also imbued with a "mythical supersign", that is, it is presented as something worthy of aspiration in the social sense. As Haug points out of the supersign in commodity aesthetics, its charm may eventually fail. Mythical meaning has not been successfully established in everyday life. Thus aesthetical rejuvenation becomes in fact a matter of semiological variation - in economic life rejuvenation of the commodity. In similar manner supplementary education may seek by iconic and linguistic means to infuse new life into models the trainee has heard and seen time and again - for example in the field of the human relationships of business management. Thus supplementary education may also pass through a series of aesthetic and semiological variations.

On means of laying bare the myths underlying supplementary educational strategy is the semiotic plot structure: here trai-

ners and trainees would be told an unfinished "tale" of the history and development of a business enterprise and asked to finish of the story in their own words. The tale would include the typical elements of story-telling-heroes, rogues and the circumstances favourable to each. Thus it would be possible for example to investigate the subjects' associations and the ambiguities of the language they employ. Such an analysis of the latent structures of language could be carried out prior to and subsequent to a given training event.

Another method would be to tell the participants a number of mythical stories and ask them to say which of these most resembles life and conditions in their place of work - the results might make it possible to conclude that certain plot structures please, for example, higher executives in private enterprise, others again lower executives, others junior staff in public administration and so on.

Fascinating possibly to the reader - but all the more demanding upon the researcher's imagination - is Propp's actant model from myth theory as applied to the field of supplementary education. Here leaders of the training organizations might be asked to give an account in their own words of their own educational policies and the obstacles encountered in them, the difficult conditions, economic helpers and adversaries, personnel relations and the like. This might reveal Greimasian actants, possibly different in training units closely allied to business life from those in, say, public administration or the supplementary educational centres affiliated to the universities.

On further method of investigating the latent structures in training activity might be the ethogenic approach proposed in The Explanation of Social Behaviour by R. Harré and P.F.Second (1972). The intervening 13 years have not, however, added concrete content or applicability to this technique, in spite of much speculation as to its possibilities. Ethogenics stresses a new, anthropomorphic picture of man intended to "humanize hu-

mans". In this conception human behaviour and social reality are always pervaded by meaning. At the same time human action is spontaneous and self-determined; activity may thus be regulated. Man acts deliberately, purposively and with an awareness of his goals - thus he does not simply react to stimuli given, he can consider his response, channel his reaction or defer it.

Other methods allied to ethogenics are those known as accounts (Cohen & Manion 1980). These involve man's possibility of commontating freely on his actions. The problem in such an approach is man's capacity for falsification, distortion and rationalization. It might be possible to ask participants in supplementary training to give accounts of themselves - this outside their training proper. These accounts must not be restricted to brief and superficial descriptions of their work, such as are naturally used as a pedagogical method in many training situations; the object would be the collection of scientific research data for the purposes of ethogenic analysis. It may be assumed that oral delivery - recored on tape - would produce more relevant and vital material than written accounts.

Research into the unconscious strata of man's life by such means as those described above will involve its own danger of losing sight of reality. The sociological doctrines of Émile Durkheim must thus constantly be borne in mind, for society, with all its latent structures, remains after all a social entity.

REFERENCES

Bernstein, B. 1971, 1973, 1975. Class, codes and control. Vol. 1-3. London: Routledge & Kegan Paul.

Bourdie, P. & Passeron, J.-C. 1977. Reproduction in education, society and culture. London: Sage.

Bowles, S. & Gintis, H. 1976. Schooling in capitalist America. New York: Basic books.

Broms, H., Kuusi, O., Niitamo, O. & Yrjölä, H. 1983. A new database for myths and values. Unpublished PM.

Broms, H. & Gahmberg, H. 1982. Mythology in management culture. Helsinki Business School reports D 58.

Broms, H. & Gahmberg, H. 1983. Communication to self in organizations and cultures. Administrative Science Quarterly 28, 482-495.

Cohen, L. & Manion, L. 1980. Research methods in education. London: Croom Helm.

Collins, R. 1971. Functional and conflict theories of educational stratification. American Sociological Review 36, 1002-1019.

Combs, A. W. 1979. Myths in education. Boston, MA: Allyn and Bacon.

Durkheim, É. 1980. Uskontoelämän alkeismuodot. (The elementary forms of religious life). Suom.: Seppo Randell. Helsinki: Tammi. (Original: Les formes elementaires de la vie religieuse, 1912.) In Finnish.

Etzioni, A. 1964. Modern organizations. Englewood Cliffs: Prentice Hall.

Falk, P. & Sulkunen, P. 1980. Suomalainen humala valkokankaalla - suomalaisen miehen myyttinen fantasia. (Drunk at the movies - The Finnish man's mythical fantasies). Sosiologia 17 (4), 257-270. In Finnish.

Frye, N. 1955. The anatomy of criticism. Oxford: Princeton University press.

Greimas, A. J. 1966. Semantique structurale. Paris: Librairie Larousse.

Harré, R. & Second, P.F. 1972. The explanation of social behaviour. Oxford: Basic Blackwell.

Haug, W.F. 1980. Warenästhetik und kapitalistische Massenkultur (I) (Commodity-aesthetics and capatalist masscultur e). Berlin: Argument-Verlag.

Johnson, S. & Blonchard, K. 1977. The one minute manager. London: Willow Books.

Lévi-Strauss, C. 1978. Myth and meaning. London: Routledge and Kegan Paul.

Lucid, D. P. (ed.) 1977. Soviet semiotics. Baltimore: The Johns Hopkins University Press.

Luostarinen, H. 1982. Luonnolliset myytit ja keinomyytit. (Natural myths and artificial myths). Alkoholipolitiikka 47 (5), 284-291. In Finnish.

Propp, V. 1929. The morphology of the folk tale. Austin, TX: University of Texas Press.

Sulkunen, P. 1983. Myyteistä ja kertomuksen semiotiikasta. (On myths and the semiotics of narration). Sosiologia 20 (1), 1-12. In Finnish.

Vesikansa, E. 1983. Supplementary higher education. Adult Education in Finland 20 (3-4), 55-60.

Young, M. (ed.) 1971. Knowledge and control. New directions for the sociology of education. London: Collier-MacMillan.

Tiivistelmäkortti

Abstract card

Mäkinen, R., Panhelainen, M. & Parjanen, M. (eds.) (1985) Recent Finnish research on higher education 1985. Reports from the Institute for Educational Research 364. University of Jyväskylä, Finland.
ISBN951-679-375-4. ISSN 0448-0953.

The report contains 11 articles on the recent research themes and problems of Finnish higher education. The areas included range from the societal and economic aspects of the university system to the problems of the students' study and professional careers, professional orientation, university pedagogics and learning, and extensions studies.
Descriptors: higher education, society, study career, professional career, student, scientific thinking, economic resources, open university, evaluation